Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 113

Exercise 1

Compute $\int_{3a}^{3} (-15 - 51 a + 34 t + 60 a t - 30 t^2 - 18 a t^2 + 8 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 5

2) 9

3) 0

4) The rest of the solutions are not correct

5) 6

6) −17

Exercise 2

Compute $\int_{-3}^{3} ((6 + 6 t) \operatorname{Cos}[3 - 3 t]) \, dt$

1) −5.80095

2) −3.49642

3) 35.613

4) −2.44829

5) −0.0114881

6) −2.84669

Exercise 3

Compute $\int_{5}^{7} \left(\frac{128}{(-1 + 2 t)^4}\right) dt$

1) −2.44829

2) 0.0195536

3) −2.33236

4) −104 081.

5) −3.49642

6) −2.84669

Exercise 4

Compute $\int_4^7 \left(\frac{15 - 2a - 5t + at}{6 - 5t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) 1.80569

2) 1.27419

3) 1.02439

4) The rest of the solutions are not correct

5) 1.50609

6) 0.806594

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 3 + 3t^2 + 2t^3 + 2t^4$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 2 years.

1) $\frac{2637}{10}$ millions of euros = 263.7 millions of euros

2) $\frac{3518}{5}$ millions of euros = 703.6 millions of euros

3) $\frac{949}{10}$ millions of euros = 94.9 millions of euros

4) $\frac{624}{5}$ millions of euros = 124.8 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (2 + t + 3t^2) \log(2t)$ euros.

Compute the average value of shares between month 1 and month 3 (between t=1 and t=3).

1) $\frac{1}{2}\left(-\frac{123}{4} - \frac{7\,\text{Log}[2]}{2} + 80\,\text{Log}[8]\right)$ euros = 66.5897 euros

2) $\frac{1}{3}\left(-\frac{166}{3} - \frac{7\,\text{Log}[2]}{2} + \frac{295\,\text{Log}[10]}{2}\right)$ euros = 93.9573 euros

3) $\frac{1}{2}\left(-\frac{44}{3} - \frac{7\,\text{Log}[2]}{2} + \frac{75\,\text{Log}[6]}{2}\right)$ euros = 25.0491 euros

4) $\frac{1}{3}\left(-\frac{123}{4} - \frac{7\,\text{Log}[2]}{2} + 80\,\text{Log}[8]\right)$ euros = 44.3931 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 36 - 18x - 4x^2 + 2x^3$ and the horizontal axis between the points $x = -2$ and $x = 2$.

1) $\frac{757}{6} = 126.1667$

2) $\frac{383}{3} = 127.6667$

3) $\frac{374}{3} = 124.6667$

4) $\frac{368}{3} = 122.6667$

5) $\frac{380}{3} = 126.6667$

6) $\frac{377}{3} = 125.6667$

7) $\frac{392}{3} = 130.6667$

8) $\frac{751}{6} = 125.1667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = (\frac{1}{100}(3 + 2t + t^2))\log(t)$ per-unit.

In the year $t=1$ we deposint in the account 15000 euros. Compute the deposit in the account after (with respect to $t=1$) 4 years.

1) 38289.2506 euros

2) 38329.2506 euros

3) 38269.2506 euros

4) 38359.2506 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 4501

Exercise 1

Compute $\int_{a}^{-4} (2 - 4a + 8t - 6at + 9t^2 - 3at^2 + 4t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 47

2) 20

3) The rest of the solutions are not correct

4) 30

5) 19

6) 27

Exercise 2

Compute $\int_{-2}^{3} (-(-4 - 2t)\,\mathrm{Sin}[2 - 2t])\,dt$

1) -12.1631

2) -10.2796

3) -4.94292

4) 14.7752

5) -8.21561

6) -2.75011

Exercise 3

Compute $\int_{4}^{8} \left(\frac{12}{(-5 + 2t)^2}\right)dt$

1) -6.43314

2) -4.34527

3) 1.45455

4) -3.64908

5) -1304.

6) -5.43694

Exercise 4

Compute $\int_3^5 \left(\frac{-2a + 2t + at}{-2t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -0.381974

2) 0.293426

3) 0.510826

4) The rest of the solutions are not correct

5) 0.406126

6) 0.551726

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 2 + 3t + 2t^2 + 2t^3 + 3t^4$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 1 year.

1) $\frac{1569}{5}$ millions of euros = 313.8 millions of euros

2) $\frac{13606}{15}$ millions of euros = 907.0667 millions of euros

3) $\frac{1429}{15}$ millions of euros = 95.2667 millions of euros

4) $\frac{1988}{15}$ millions of euros = 132.5333 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (6 + t)\, e^{-1+3t}$ euros.

Compute the average value of the shares along the first 3 months of the year (between t=0 and t=3).

1) $\frac{1}{3}\left(-\frac{17}{9e} + \frac{20e^2}{9}\right)$ euros = 5.2417 euros

2) $\frac{1}{3}\left(-\frac{17}{9e} + \frac{26e^8}{9}\right)$ euros = 2870.3205 euros

3) $\frac{1}{3}\left(-\frac{17}{9e} + \frac{23e^5}{9}\right)$ euros = 126.1944 euros

4) $\frac{1}{3}\left(\frac{14}{9e^4} - \frac{17}{9e}\right)$ euros = -0.2221 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 2x - x^2$ and the horizontal axis between the points $x=-3$ and $x=0$.

1) $\frac{41}{2} = 20.5$

2) $\frac{45}{2} = 22.5$

3) 20

4) 22

5) 18

6) $\frac{43}{2} = 21.5$

7) $\frac{39}{2} = 19.5$

8) 21

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{8}(2 + 2t)\right) e^{-3+2t}$ per-unit.

The initial deposit in the account is 15000 euros. Compute the deposit after 1 year.

1) 16021.249 euros

2) 16091.249 euros

3) 16101.249 euros

4) 16051.249 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 187462

Exercise 1

Compute $\int_{-a}^{3} (-4 - 9a - 18t + 15at^2 + 20t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −114

2) The rest of the solutions are not correct

3) −119

4) −104

5) −127

6) −117

Exercise 2

Compute $\int_{-2}^{2} (-e^{1+t})\, dt$

1) −19.7177

2) −90.3239

3) −82.282

4) −95.803

5) −40.9068

6) −40.9068

Exercise 3

Compute $\int_{-6}^{-2} \left(\frac{63}{(-4+3t)^2}\right) dt$

1) −5.56547

2) 1.14545

3) −4.77999

4) −5.24717

5) −4.7442

6) −9648.

Exercise 4

Compute $\int_2^3 \left(\frac{2-5a-2t-5at}{-1+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) −3.10354

3) −3.58014

4) −4.04204

5) −3.66514

6) −4.13744

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (4+4t)\log(5t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 50 millions euros, compute the deposit available after (with respect to t=1) 2 years.

1) 23 − 6 Log[5] + 48 Log[20] millions of euros = 157.1385 millions of euros

2) 10 − 6 Log[5] + 70 Log[25] millions of euros = 225.6647 millions of euros

3) 54 − 6 Log[5] + 30 Log[15] millions of euros = 125.5849 millions of euros

4) 34 − 6 Log[5] + 30 Log[15] millions of euros = 105.5849 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (-4+3t)\cos(8t)$ euros.

Compute the average value of the shares along the first 2π months of the year (between t=0 and $t=2\pi$).

1) −70 euros

2) 10 euros

3) 0 euros

4) 30 euros

Exercise 7

Compute the area enclosed by the function $f(x)=6-3x-6x^2+3x^3$ and the horizontal axis between the points $x=-5$ and $x=2$.

1) $\frac{2661}{4} = 665.25$

2) $\frac{2671}{4} = 667.75$

3) $\frac{2651}{4} = 662.75$

4) $\frac{2673}{4} = 668.25$

5) $\frac{2597}{4} = 649.25$

6) $\frac{2669}{4} = 667.25$

7) $\frac{2587}{4} = 646.75$

8) $\frac{2667}{4} = 666.75$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t)=(\frac{1}{100}(-1+8t))\cos(4t)$ per-unit.

The initial deposit in the account is 11 000 euros. Compute the deposit after 2π years.

1) 11 000 euros

2) 10 940 euros

3) 11 060 euros

4) 10 910 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 550273

Exercise 1

Compute $\int_{a}^{5} (3a - 6t + 8at - 12t^2 - 15at^2 + 20t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -513

2) -510

3) The rest of the solutions are not correct

4) -511

5) -505

6) -503

Exercise 2

Compute $\int_{1}^{5} ((-4 + 4t)\,\text{Log}[2t])\,dt$

1) 62.4638

2) 194.774

3) -173.278

4) -241.857

5) 70.4638

6) -169.36

Exercise 3

Compute $\int_{1}^{7} \left(\frac{448}{(4 + 4t)^3}\right)\,dt$

1) -1.93318

2) -522 240.

3) -3.87195

4) -2.77406

5) 0.820313

6) -2.71134

Exercise 4

Compute $\int_5^8 \left(\frac{5-9a-5t+3at}{3-4t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 1.13155

3) 1.16815

4) 1.24745

5) 1.14395

6) 2.17615

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (4+t)\,e^{2+t}$ millions of euros/year.

If the initial deposit in the investment fund was 60 millions of euros, compute the depositis available after 3 years.

1) $60 - 3e^2 + 4e^3$ millions of euros = 118.175 millions of euros

2) $60 + 2e - 3e^2$ millions of euros = 43.2694 millions of euros

3) $60 - 3e^2 + 6e^5$ millions of euros = 928.3118 millions of euros

4) $60 - 3e^2 + 5e^4$ millions of euros = 310.8236 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (-7-6t)\cos(7t)$ euros.

Compute the average value of the shares along the first π months of the year (between t=0 and t=π).

1) 0 euros

2) $70 + \frac{12}{49\pi}$ euros = 70.078 euros

3) $90 + \frac{12}{49\pi}$ euros = 90.078 euros

4) $\frac{12}{49\pi}$ euros = 0.078 euros

Exercise 7

Compute the area enclosed by the function $f(x)=-18+15x+6x^2-3x^3$ and the horizontal axis between the points $x=-2$ and $x=2$.

1) 56

2) $\frac{117}{2} = 58.5$

3) $\frac{113}{2} = 56.5$

4) $\frac{115}{2} = 57.5$

5) 57

6) 40

7) $\frac{109}{2} = 54.5$

8) 58

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t)=\left(\frac{1}{100}(-3-5t)\right)\cos(7t)$ per-unit.

The initial deposit in the account is 9000 euros. Compute the deposit after 5π years.

1) 9108.3861 euros

2) 9088.3861 euros

3) 9018.3861 euros

4) 8988.3861 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 2959749

Exercise 1

Compute $\int_{a}^{-5} (-4 - a + 2\,t - 2\,a\,t + 3\,t^2 + 12\,a\,t^2 - 16\,t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) −530

3) −532

4) −516

5) −533

6) −529

Exercise 2

Compute $\int_{0}^{1} (e^{1-t}\,(3 - 3\,t - 2\,t^2))\,dt$

1) −8.73151

2) −10.6212

3) 0.833333

4) 2.12687

5) −0.833333

6) −9.26058

Exercise 3

Compute $\int_{-6}^{-3} (\frac{2}{t^5})\,dt$

1) 11481.8

2) −0.00578704

3) −4.10533

4) −4.99382

5) −4.35408

6) −3.48321

Exercise 4

Compute $\int_0^1 \left(\frac{5 + 10\,a + 5\,t + 5\,a\,t}{2 + 3\,t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) 3.31864

2) The rest of the solutions are not correct

3) 2.47784

4) 2.82494

5) 3.13554

6) 3.46574

Exercise 5

The deposits of an investment fund vary from one year to
another being the speed of that variation determined by the function

$v(t) = (1 + t)\log(4\,t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 60
millions euros, compute the deposit available after (with respect to t=1) 4 years.

1) $50 - \frac{3\,\text{Log}[4]}{2} + \frac{35\,\text{Log}[20]}{2}$ millions of euros = 100.3459 millions of euros

2) $\frac{213}{4} - \frac{3\,\text{Log}[4]}{2} + 12\,\text{Log}[16]$ millions of euros = 84.4416 millions of euros

3) $90 - \frac{3\,\text{Log}[4]}{2} + \frac{35\,\text{Log}[20]}{2}$ millions of euros = 140.3459 millions of euros

4) $\frac{185}{4} - \frac{3\,\text{Log}[4]}{2} + 24\,\text{Log}[24]$ millions of euros = 120.4439 millions of euros

Exercise 6

The true value of certain shares oscillates along the year.
The following function yields the value of the shares for each month t:

$V(t) = \cos(-3 + 9\,t)$ euros.

Compute the average value of the shares along the first
$3\,\pi$ months of the year (between t=0 and $t=3\,\pi$).

1) $\frac{2\,\text{Sin}[3]}{27\,\pi}$ euros = 0.0033 euros

2) $50 + \frac{2\,\text{Sin}[3]}{27\,\pi}$ euros = 50.0033 euros

3) $-60 + \frac{2\,\text{Sin}[3]}{27\,\pi}$ euros = -59.9967 euros

4) $-80 + \frac{2\,\text{Sin}[3]}{27\,\pi}$ euros = -79.9967 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -12 - 12x + 3x^2 + 3x^3$ and the horizontal axis between the points $x = -5$ and $x = 2$.

1) $\frac{1127}{4} = 281.75$

2) $\frac{1141}{4} = 285.25$

3) $\frac{1151}{4} = 287.75$

4) $\frac{871}{4} = 217.75$

5) $\frac{857}{4} = 214.25$

6) $\frac{1155}{4} = 288.75$

7) $\frac{1149}{4} = 287.25$

8) $\frac{1153}{4} = 288.25$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\cos(-3 + t)$ per-unit.

The initial deposit in the account is 8000 euros. Compute the deposit after 3π years.

1) 8189.0086 euros

2) 8229.0086 euros

3) 8169.0086 euros

4) 8199.0086 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 3180328

Exercise 1

Compute $\int_a^1 (-1 - 4a + 8t - 6at + 9t^2 + 6at^2 - 8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −7

2) −10

3) −4

4) The rest of the solutions are not correct

5) −18

6) −5

Exercise 2

Compute $\int_3^6 (-2\,\mathrm{Log}[t])\,dt$

1) −14.9094

2) −8.90944

3) −55.2317

4) −40.671

5) −38.4833

6) −42.0945

Exercise 3

Compute $\int_{-9}^{-6} \left(\frac{40}{(3+2t)^3}\right) dt$

1) −4.7247

2) −3.88617

3) −4.56493

4) −0.0790123

5) 22 032.

6) −4.31938

Exercise 4

Compute $\int_4^6 \left(\frac{-6\,a + 5\,t + 2\,a\,t}{-3\,t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.03823

2) 0.88573

3) The rest of the solutions are not correct

4) 0.81093

5) 1.00223

6) 0.98673

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 20\,e^{3+t}$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 3 years.

1) $90 - 20\,e^3 + 20\,e^4$ millions of euros = 780.2523 millions of euros

2) $90 + 20\,e^2 - 20\,e^3$ millions of euros = −163.9296 millions of euros

3) $90 - 20\,e^3 + 20\,e^5$ millions of euros = 2656.5524 millions of euros

4) $90 - 20\,e^3 + 20\,e^6$ millions of euros = 7756.8651 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (9 + 8\,t)\,e^{2+2\,t}$ euros.

Compute the average value of the shares along the first 9 months of the year (between t=0 and t=9).

1) $\frac{1}{9}\left(-\frac{5\,e^2}{2} + \frac{77\,e^{20}}{2}\right)$ euros = 2.0754×10^9 euros

2) $\frac{1}{9}\left(-\frac{5\,e^2}{2} + \frac{13\,e^4}{2}\right)$ euros = 37.3795 euros

3) $\frac{1}{9}\left(-\frac{3}{2} - \frac{5\,e^2}{2}\right)$ euros = −2.2192 euros

4) $\frac{1}{9}\left(-\frac{5\,e^2}{2} + \frac{21\,e^6}{2}\right)$ euros = 468.6144 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -9x - 6x^2 + 3x^3$ and the horizontal axis between the points x=1 and x=5.

1) 168

2) $\frac{343}{2} = 171.5$

3) 112

4) 172

5) $\frac{339}{2} = 169.5$

6) $\frac{341}{2} = 170.5$

7) 170

8) 171

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{-2+t}{1628}\right) e^{2+3t}$ per-unit.

The initial deposit in the account is 7000 euros. Compute the deposit after 1 year.

1) 6765.8226 euros

2) 6725.8226 euros

3) 6835.8226 euros

4) 6745.8226 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 6548030

Exercise 1

Compute $\int_{3a}^{0} (9a - 6t - 24at + 12t^2 - 27at^2 + 12t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -4

2) -8

3) 0

4) -20

5) The rest of the solutions are not correct

6) -14

Exercise 2

Compute $\int_{2}^{3} ((-1 - 3t)\,\mathrm{Cos}[1 + t])\,dt$

1) -34.9675

2) -34.9442

3) 7.54682

4) 13.6162

5) 2.86518

6) -35.5057

Exercise 3

Compute $\int_{-9}^{-3} \left(\frac{96}{(1 + 4t)^2}\right)dt$

1) -41 544.

2) -6.85058

3) -6.92744

4) -7.03876

5) -6.93207

6) 1.4961

Exercise 4

Compute $\int_2^3 \left(\frac{-3 + 15\,a + 3\,t + 5\,a\,t}{-3 + 2\,t + t^2}\right) dt$
. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 4.13754

2) 2.96524

3) The rest of the solutions are not correct

4) 3.46574

5) 2.49244

6) 3.69634

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (1 + 4\,t + t^2) \log(3\,t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 80 millions euros, compute the deposit available after (with respect to t=1) 3 years.

1) $\frac{145}{9} - \frac{10\,\text{Log}[3]}{3} + 150\,\text{Log}[18]$ millions of euros = 446.0048 millions of euros

2) $\frac{344}{9} - \frac{10\,\text{Log}[3]}{3} + \frac{290\,\text{Log}[15]}{3}$ millions of euros = 296.3384 millions of euros

3) $55 - \frac{10\,\text{Log}[3]}{3} + \frac{172\,\text{Log}[12]}{3}$ millions of euros = 193.8059 millions of euros

4) $45 - \frac{10\,\text{Log}[3]}{3} + \frac{172\,\text{Log}[12]}{3}$ millions of euros = 183.8059 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (-7 - 5\,t) \cos(9\,t)$ euros.

Compute the average value of the shares along the first 3π months of the year (between t=0 and t=3π).

1) 0 euros

2) $\frac{10}{243\,\pi}$ euros = 0.0131 euros

3) $-90 + \frac{10}{243\,\pi}$ euros = -89.9869 euros

4) $50 + \frac{10}{243\,\pi}$ euros = 50.0131 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -18 + 18x + 2x^2 - 2x^3$ and the horizontal axis between the points $x = -3$ and $x = 1$.

1) $\frac{521}{6} = 86.8333$

2) $\frac{533}{6} = 88.8333$

3) $\frac{265}{3} = 88.3333$

4) $\frac{268}{3} = 89.3333$

5) $\frac{256}{3} = 85.3333$

6) $\frac{527}{6} = 87.8333$

7) $\frac{539}{6} = 89.8333$

8) $\frac{262}{3} = 87.3333$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(-1 - 7t)\right)\cos(3t)$ per-unit.

The initial deposit in the account is 18 000 euros. Compute the deposit after 5π years.

1) 18312.1891 euros

2) 18292.1891 euros

3) 18282.1891 euros

4) 18222.1891 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 7476889

Exercise 1

Compute $\int_{-3a}^{-4} (10 - 27a - 18t + 36at + 18t^2 - 18at^2 - 8t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 805

2) The rest of the solutions are not correct

3) 810

4) 809

5) 811

6) 825

Exercise 2

Compute $\int_{0}^{1} (-(9 - 27t - 27t^2)\, \text{Sin}[2 - 3t])\, dt$

1) -22.8435

2) -19.447

3) 2.43136

4) -22.5668

5) -11.3599

6) -5.35794

Exercise 3

Compute $\int_{0}^{5} \left(-\frac{64}{(-5 - 2t)^5}\right) dt$

1) -3.62357

2) -2.84375×10^6

3) -3.62957

4) -4.21184

5) 0.012642

6) -4.26349

Exercise 4

Compute $\int_{7}^{8}\left(\frac{-6-15\,a+2\,t-5\,a\,t}{-9+t^{2}}\right)dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −1.37062

2) −1.45172

3) −2.04852

4) −1.54482

5) The rest of the solutions are not correct

6) −1.57132

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (2+t)\log(2\,t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 50 millions euros, compute the deposit available after (with respect to t=1) 2 years.

1) $44-\frac{5\,\text{Log}[2]}{2}+\frac{21\,\text{Log}[6]}{2}$ millions of euros = 61.0806 millions of euros

2) $36-\frac{5\,\text{Log}[2]}{2}+\frac{45\,\text{Log}[10]}{2}$ millions of euros = 86.0753 millions of euros

3) $134-\frac{5\,\text{Log}[2]}{2}+\frac{21\,\text{Log}[6]}{2}$ millions of euros = 151.0806 millions of euros

4) $\frac{161}{4}-\frac{5\,\text{Log}[2]}{2}+16\,\text{Log}[8]$ millions of euros = 71.7882 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (4+2\,t+4\,t^{2})\log(5\,t)$ euros.

Compute the average value of shares between month 1 and month 3 (between t=1 and t=3).

1) $\frac{1}{3}\left(-\frac{95}{2}-\frac{19\,\text{Log}[5]}{3}+\frac{352\,\text{Log}[20]}{3}\right)$ euros = 97.9354 euros

2) $\frac{1}{2}\left(-\frac{95}{2}-\frac{19\,\text{Log}[5]}{3}+\frac{352\,\text{Log}[20]}{3}\right)$ euros = 146.9031 euros

3) $\frac{1}{3}\left(-\frac{748}{9}-\frac{19\,\text{Log}[5]}{3}+\frac{635\,\text{Log}[25]}{3}\right)$ euros = 196.0082 euros

4) $\frac{1}{2}\left(-\frac{212}{9}-\frac{19\,\text{Log}[5]}{3}+57\,\text{Log}[15]\right)$ euros = 60.3051 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -9x + x^3$ and the horizontal axis between the points x=0 and x=3.

1) $\frac{93}{4} = 23.25$

2) $\frac{91}{4} = 22.75$

3) $\frac{89}{4} = 22.25$

4) $\frac{81}{4} = 20.25$

5) $\frac{95}{4} = 23.75$

6) $\frac{97}{4} = 24.25$

7) $\frac{87}{4} = 21.75$

8) $\frac{99}{4} = 24.75$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{2+t}{100}\right)\log(2t)$ per-unit.

In the year t=1 we deposint in the account 4000 euros. Compute the deposit in the account after (with respect to t=1) 4 years.

1) 5737.6363 euros

2) 5787.6363 euros

3) 5817.6363 euros

4) 5797.6363 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 7511947

Exercise 1

Compute $\int_{-a}^{4} (1 - 3a - 6t + 8at + 12t^2 - 6at^2 - 8t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −84

2) The rest of the solutions are not correct

3) −71

4) −66

5) −75

6) −67

Exercise 2

Compute $\int_{-2}^{2} (-\mathrm{Cos}[1 - 3t])\, dt$

1) 1.07727

2) −2.17527

3) −4.37025

4) −2.07513

5) 0.100646

6) −3.3991

Exercise 3

Compute $\int_{-4}^{-1} \left(\frac{1250}{(2 - 5t)^4}\right) dt$

1) −4.37025

2) −1.84491

3) −3.3991

4) −2.17527

5) 1.71228×10^6

6) 0.235128

Exercise 4

Compute $\int_3^4 (\frac{15+5t+2at}{3t+t^2})\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −0.200499

2) −0.683699

3) −0.0340986

4) −0.0900986

5) The rest of the solutions are not correct

6) 0.308301

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t)=10\,e^{-1+2t}$ millions of euros/year.

If the initial deposit in the investment fund was 20 millions of euros, compute the depositis available after 1 year.

1) $20+\frac{5}{e^3}-\frac{5}{e}$ millions of euros = 18.4095 millions of euros

2) $20-\frac{5}{e}+5\,e$ millions of euros = 31.752 millions of euros

3) $20-\frac{5}{e}+5\,e^3$ millions of euros = 118.5883 millions of euros

4) $20-\frac{5}{e}+5\,e^5$ millions of euros = 760.2264 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=3+2t+3t^2+3t^3+t^4$ euros.

Compute the average value of the shares along the first 4 months of the year (between t=0 and t=4).

1) $\frac{611}{5}$ euros = 122.2 euros

2) $\frac{3087}{80}$ euros = 38.5875 euros

3) $\frac{91}{10}$ euros = 9.1 euros

4) $\frac{119}{80}$ euros = 1.4875 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -6x - 2x^2$ and the horizontal axis between the points $x=1$ and $x=4$.

1) $\frac{177}{2} = 88.5$

2) 87

3) 92

4) 89

5) $\frac{183}{2} = 91.5$

6) $\frac{179}{2} = 89.5$

7) 91

8) 90

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{100}\left(3 + 2t + 3t^2 + 3t^3\right)$ per-unit.

The initial deposit in the account is 14 000 euros. Compute the deposit after 1 year.

1) 14828.5938 euros

2) 14868.5938 euros

3) 14818.5938 euros

4) 14898.5938 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 7803104

Exercise 1

Compute $\int_{-3a}^{2} (18 a + 12 t - 66 a t - 33 t^2 + 36 a t^2 + 16 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 6

2) 0

3) 8

4) 5

5) The rest of the solutions are not correct

6) -11

Exercise 2

Compute $\int_{-1}^{1} (e^{3+t} (-1 - 2 t)) \, dt$

1) -109.196

2) -337.575

3) -109.196

4) -76.7653

5) -338.858

6) -352.745

Exercise 3

Compute $\int_{-2}^{0} \left(\frac{135}{(-2 + 3 t)^3}\right) dt$

1) -24.232

2) -5.27344

3) -23.278

4) -21.2668

5) -23.1899

6) 2040.

Exercise 4

Compute $\int_2^3 \left(\frac{-3+3t-4at}{-t+t^2}\right)dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −2.77259

2) The rest of the solutions are not correct

3) −2.05849

4) −2.21349

5) −2.46739

6) −3.09459

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (9+8t)(\cos(2\pi t)+1)$ millions of euros/year.

If the initial deposit in the investment fund was 40 millions of euros, compute the depositis available after 3 years.

1) 74 millions of euros

2) 103 millions of euros

3) 35 millions of euros

4) 53 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (5-7t)\cos(4t)$ euros.

Compute the average value of the shares along the first 2π months of the year (between $t=0$ and $t=2\pi$).

1) 30 euros

2) −30 euros

3) −80 euros

4) 0 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -2x + x^2 + x^3$ and the horizontal axis between the points $x=-2$ and $x=5$.

1) $\frac{2147}{12} = 178.9167$

2) $\frac{681}{4} = 170.25$

3) $\frac{2153}{12} = 179.4167$

4) $\frac{2159}{12} = 179.9167$

5) $\frac{2165}{12} = 180.4167$

6) $\frac{2117}{12} = 176.4167$

7) $\frac{2135}{12} = 177.9167$

8) $\frac{2141}{12} = 178.4167$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(-8 - t)\right)\cos(6t)$ per-unit.

The initial deposit in the account is 13 000 euros. Compute the deposit after 5π years.

1) 12 940 euros

2) 12 960 euros

3) 13 000 euros

4) 13 010 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 8623226

Exercise 1

Compute $\int_{a}^{-2} (2a - 4t + 6at - 9t^2 - 15at^2 + 20t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 55

3) 40

4) 29

5) 36

6) 48

Exercise 2

Compute $\int_{0}^{2} ((6 - 2t)\,\mathrm{Cos}[2 + 2t])\,dt$

1) -1.11766

2) -12.5985

3) -14.3822

4) -3.69547

5) 7.68136

6) -12.6968

Exercise 3

Compute $\int_{-8}^{-3} \left(\frac{128}{(2 + 2t)^5}\right)dt$

1) -3.43579

2) -3.40918

3) 1.88136×10^{6}

4) -3.20991

5) -3.89184

6) -0.0620835

Exercise 4

Compute $\int_1^3 \left(\frac{4-2a+2t-2at}{2+3t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −1.14125

2) −0.945151

3) −0.947351

4) The rest of the solutions are not correct

5) −1.57415

6) −1.02165

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t)=20\,e^{2+3t}$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 3 years.

1) $90-\frac{20\,e^2}{3}+\frac{20\,e^5}{3}$ millions of euros = 1030.1607 millions of euros

2) $90-\frac{20\,e^2}{3}+\frac{20\,e^{11}}{3}$ millions of euros = 399201.6844 millions of euros

3) $90-\frac{20\,e^2}{3}+\frac{20\,e^8}{3}$ millions of euros = 19913.7929 millions of euros

4) $90+\frac{20}{3\,e}-\frac{20\,e^2}{3}$ millions of euros = 43.1922 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=30\,e^{3+3t}$ euros.

Compute the average value of the shares along the first 4 months of the year (between t=0 and t=4).

1) $\frac{1}{4}\left(-10\,e^3+10\,e^6\right)$ euros = 958.3581 euros

2) $\frac{1}{4}\left(-10\,e^3+10\,e^{15}\right)$ euros = 8.1725×10^6 euros

3) $\frac{1}{4}\left(10-10\,e^3\right)$ euros = −47.7138 euros

4) $\frac{1}{4}\left(-10\,e^3+10\,e^9\right)$ euros = 20207.496 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 4 + 6x + 2x^2$ and the horizontal axis between the points $x=1$ and $x=5$.

1) $\frac{524}{3} = 174.6667$

2) $\frac{512}{3} = 170.6667$

3) $\frac{527}{3} = 175.6667$

4) $\frac{1051}{6} = 175.1667$

5) $\frac{518}{3} = 172.6667$

6) $\frac{1033}{6} = 172.1667$

7) $\frac{1039}{6} = 173.1667$

8) $\frac{521}{3} = 173.6667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{e^{-1+t}}{15}$ per-unit.

The initial deposit in the account is 11000 euros. Compute the deposit after 1 year.

1) 11543.4612 euros

2) 11473.4612 euros

3) 11503.4612 euros

4) 11463.4612 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 8792788

Exercise 1

Compute $\int_{-3a}^{0} (6 - 33 a - 22 t - 72 a t - 36 t^2 + 45 a t^2 + 20 t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 10

2) 27

3) 0

4) -2

5) 18

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_{1}^{3} ((-4 - 2 t) \operatorname{Cos}[2 - 2 t])\, dt$

1) -20.9888

2) 7.94643

3) 4.61083

4) -21.9565

5) -22.6046

6) 18.7265

Exercise 3

Compute $\int_{-7}^{-2} \left(\frac{81}{(1 - 3 t)^4}\right) dt$

1) 0.0253938

2) -4.76194

3) -4.08155

4) -4.55205

5) -4.9025

6) 1.71228×10^6

Exercise 4

Compute $\int_2^3 \left(\frac{2+t+5\,a\,t}{2\,t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 1.09622

3) 0.734018

4) 0.565118

5) 1.11572

6) 1.02362

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (1+t+4\,t^2)\log(2\,t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 40 millions euros, compute the deposit available after (with respect to t=1) 4 years.

1) $-\frac{2495}{36} - \frac{17\,\text{Log}[2]}{6} + 312\,\text{Log}[12]$ millions of euros = 704.0214 millions of euros

2) $-\frac{226}{9} - \frac{17\,\text{Log}[2]}{6} + \frac{1105\,\text{Log}[10]}{6}$ millions of euros = 396.9844 millions of euros

3) $\frac{314}{9} - \frac{17\,\text{Log}[2]}{6} + \frac{1105\,\text{Log}[10]}{6}$ millions of euros = 456.9844 millions of euros

4) $\frac{21}{4} - \frac{17\,\text{Log}[2]}{6} + \frac{292\,\text{Log}[8]}{3}$ millions of euros = 205.6851 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 30\,e^{3+3\,t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $\frac{1}{8}\left(10-10\,e^3\right)$ euros = -23.8569 euros

2) $\frac{1}{8}\left(-10\,e^3+10\,e^{27}\right)$ euros = 6.6506×10^{11} euros

3) $\frac{1}{8}\left(-10\,e^3+10\,e^9\right)$ euros = 10103.748 euros

4) $\frac{1}{8}\left(-10\,e^3+10\,e^6\right)$ euros = 479.1791 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -4x - 6x^2 - 2x^3$ and the horizontal axis between the points $x = -4$ and $x = -1$.

1) $\frac{75}{2} = 37.5$

2) $\frac{77}{2} = 38.5$

3) $\frac{69}{2} = 34.5$

4) 35

5) $\frac{65}{2} = 32.5$

6) 36

7) $\frac{71}{2} = 35.5$

8) $\frac{73}{2} = 36.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{14} e^{-6+2t}$ per-unit.

The initial deposit in the account is 14000 euros. Compute the deposit after 3 years.

1) 14507.7514 euros

2) 14508.9857 euros

3) 14497.7514 euros

4) 14517.7514 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 9214549

Exercise 1

Compute $\int_{-3a}^{3}(-15-60a-40t+42at+21t^2+36at^2+16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 277

2) The rest of the solutions are not correct

3) 284

4) 278

5) 288

6) 270

Exercise 2

Compute $\int_{-1}^{0}(-2\,\mathrm{Cos}[3+2t])\,dt$

1) -4.05317

2) -4.56856

3) 0.700351

4) -1.0806

5) -0.841471

6) -4.24482

Exercise 3

Compute $\int_{-8}^{-2}\left(-\frac{3}{-1-3t}\right)dt$

... N: Internal precision limit \$MaxExtraPrecision = 50.` reached while evaluating $\mathrm{Log}\left[\frac{23}{5}\right]+\mathrm{Log}[5]-\mathrm{Log}[23]$.

1) -4.32298

2) -6.97188

3) -6.18536

4) -5.23848

5) -6.47783

6) -1.52606

Exercise 4

Compute $\int_1^2 \left(\frac{2+t+a\,t}{2\,t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -0.577818

2) 0.209982

3) The rest of the solutions are not correct

4) -0.435518

5) 0.211482

6) 0.287682

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 2 + 3\,t + t^3$ millions of euros/year.

If the initial deposit in the investment fund was 40 millions of euros, compute the depositis available after 1 year.

1) $\frac{175}{4}$ millions of euros = 43.75 millions of euros

2) 136 millions of euros

3) $\frac{319}{4}$ millions of euros = 79.75 millions of euros

4) 54 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 10\,e^{-1+2\,t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $\frac{1}{8}\left(-\frac{5}{e} + 5\,e^3\right)$ euros = 12.3235 euros

2) $\frac{1}{8}\left(-\frac{5}{e} + 5\,e^{15}\right)$ euros = 2.0431×10^6 euros

3) $\frac{1}{8}\left(\frac{5}{e^3} - \frac{5}{e}\right)$ euros = -0.1988 euros

4) $\frac{1}{8}\left(-\frac{5}{e} + 5\,e\right)$ euros = 1.469 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -4x - 6x^2 - 2x^3$ and the horizontal axis between the points $x = -2$ and $x = 3$.

1) 115

2) 116

3) $\frac{233}{2} = 116.5$

4) $\frac{231}{2} = 115.5$

5) $\frac{235}{2} = 117.5$

6) $\frac{227}{2} = 113.5$

7) 117

8) $\frac{223}{2} = 111.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{8} e^{-9+3t}$ per-unit.

The initial deposit in the account is 6000 euros. Compute the deposit after 3 years.

1) 6305.2493 euros

2) 6255.2493 euros

3) 6235.2493 euros

4) 6295.2493 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 9810258

Exercise 1

Compute $\int_{2a}^{-5} (15 + 20\,a - 20\,t + 80\,a\,t - 60\,t^2 + 30\,a\,t^2 - 20\,t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −375

2) −367

3) −398

4) −372

5) −380

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_{0}^{1} (e^{-t}\,(3 - 3\,t + 2\,t^2))\,dt$

1) −5.38867

2) −4.72792

3) 1.42484

4) −4.93779

5) −0.797072

6) −5.31616

Exercise 3

Compute $\int_{-8}^{-7} (-\frac{7}{-5 - t})\,dt$

1) −0.405465

2) −9.83597

3) −9.4179

4) −2.83826

5) −10.5897

6) −10.7341

Exercise 4

Compute $\int_3^4 \left(\frac{4-8a+4t+4at}{-2-t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.15857

2) 1.11567

3) 0.274774

4) 0.892574

5) The rest of the solutions are not correct

6) 0.744874

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (6 + 7t)(\sin(2\pi t) + 1)$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 4 years.

1) $\frac{135}{2} + \frac{7}{2\pi}$ millions of euros = 68.6141 millions of euros

2) $\frac{159}{2} - \frac{7}{2\pi}$ millions of euros = 78.3859 millions of euros

3) $150 - \frac{14}{\pi}$ millions of euros = 145.5437 millions of euros

4) $96 - \frac{7}{\pi}$ millions of euros = 93.7718 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \sin(4 + 4t)$ euros.

Compute the average value of the shares along the first 3π months of the year (between t=0 and t=3π).

1) $20 + \frac{\frac{\text{Cos}[4]}{4} - \frac{1}{4}\text{Cos}[4(1+3\pi)]}{3\pi}$ euros = 20. euros

2) $\frac{\frac{\text{Cos}[4]}{4} - \frac{1}{4}\text{Cos}[4(1+3\pi)]}{3\pi}$ euros = 0. euros

3) $-30 + \frac{\frac{\text{Cos}[4]}{4} - \frac{1}{4}\text{Cos}[4(1+3\pi)]}{3\pi}$ euros = -30. euros

4) $50 + \frac{\frac{\text{Cos}[4]}{4} - \frac{1}{4}\text{Cos}[4(1+3\pi)]}{3\pi}$ euros = 50. euros

Exercise 7

Compute the area enclosed by the function $f(x) = -4 - 2x + 2x^2$ and the horizontal axis between the points $x=-5$ and $x=0$.

1) $\frac{193}{2} = 96.5$

2) 96

3) $\frac{265}{3} = 88.3333$

4) 98

5) 97

6) $\frac{191}{2} = 95.5$

7) 93

8) 95

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\sin(-3 + 6t)$ per-unit.

The initial deposit in the account is 9000 euros. Compute the deposit after 3π years.

1) 9080 euros

2) 9000 euros

3) 9090 euros

4) 9020 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 12865294

Exercise 1

Compute $\int_{3a}^{-1} (3a - 2t + 24at - 12t^2 + 27at^2 - 12t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −20

2) −19

3) The rest of the solutions are not correct

4) −12

5) 0

6) −16

Exercise 2

Compute $\int_{-2}^{3} ((3-t)\,\text{Cos}[1+t])\,dt$

1) −10.1374

2) −15.3907

3) 1.38102

4) 5.4013

5) −19.766

6) −14.2722

Exercise 3

Compute $\int_{7}^{8} \left(\frac{6}{(2-t)^2}\right)dt$

1) −2.52812

2) −2.84944

3) −2.64236

4) 91.

5) −3.65949

6) 0.2

Exercise 4

Compute $\int_5^7 \left(\frac{4 + 9a + 4t - 3at}{-3 - 2t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -1.59785

2) The rest of the solutions are not correct

3) -1.38325

4) -1.86115

5) -1.72615

6) -0.863046

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (9 + 8t)\,e^{-1+3t}$ millions of euros/year.

If the initial deposit in the investment fund was 60 millions of euros, compute the depositis available after 2 years.

1) $60 - \frac{19}{9e} + \frac{67e^5}{9}$ millions of euros = 1164.0769 millions of euros

2) $60 - \frac{19}{9e} + \frac{91e^8}{9}$ millions of euros = 30200.0208 millions of euros

3) $60 - \frac{19}{9e} + \frac{43e^2}{9}$ millions of euros = 94.5266 millions of euros

4) $60 - \frac{5}{9e^4} - \frac{19}{9e}$ millions of euros = 59.2132 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \cos(5 + 5t)$ euros.

Compute the average value of the shares along the first π months of the year (between $t=0$ and $t=\pi$).

1) $60 + \frac{-\frac{\text{Sin}[5]}{5} + \frac{1}{5}\text{Sin}[5(1+\pi)]}{\pi}$ euros = 60.1221 euros

2) $90 + \frac{-\frac{\text{Sin}[5]}{5} + \frac{1}{5}\text{Sin}[5(1+\pi)]}{\pi}$ euros = 90.1221 euros

3) $\frac{-\frac{\text{Sin}[5]}{5} + \frac{1}{5}\text{Sin}[5(1+\pi)]}{\pi}$ euros = 0.1221 euros

4) $30 + \frac{-\frac{\text{Sin}[5]}{5} + \frac{1}{5}\text{Sin}[5(1+\pi)]}{\pi}$ euros = 30.1221 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -12 - 14x + 2x^3$ and the horizontal axis between the points $x=-3$ and $x=2$.

1) $\frac{125}{2} = 62.5$

2) 63

3) $\frac{121}{2} = 60.5$

4) $\frac{115}{2} = 57.5$

5) $\frac{83}{2} = 41.5$

6) $\frac{127}{2} = 63.5$

7) 62

8) $\frac{77}{2} = 38.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\cos(6 + 4t)$ per-unit.

The initial deposit in the account is 12 000 euros. Compute the deposit after 2π years.

1) 12 000 euros

2) 11 930 euros

3) 12 040 euros

4) 11 920 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 13082921

Exercise 1

Compute $\int_{2a}^{5} (-8 - 8a + 8t + 8at - 6t^2 - 6at^2 + 4t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −188

2) −174

3) The rest of the solutions are not correct

4) −185

5) −194

6) −178

Exercise 2

Compute $\int_{0}^{1} (e^{2-t} (2 + 3t^2))\,dt$

1) −62.3109

2) 12.9017

3) 8.15485

4) −59.3403

5) −8.15485

6) −51.5506

Exercise 3

Compute $\int_{-4}^{-1} (\frac{5}{t^5})\,dt$

1) 4.19328×10^6

2) −6.01352

3) −1.24512

4) −4.96221

5) −4.97506

6) −5.72683

Exercise 4

Compute $\int_5^7 \left(\frac{-3-9a-3t+3at}{-3-2t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) 1.08895

2) The rest of the solutions are not correct

3) −0.131554

4) 0.195146

5) 1.00715

6) 0.573046

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (9 + 6t) e^{1+3t}$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 1 year.

1) $70 - \frac{7e}{3} + \frac{19e^7}{3}$ millions of euros = 7009.0007 millions of euros

2) $70 + \frac{1}{3e^2} - \frac{7e}{3}$ millions of euros = 63.7025 millions of euros

3) $70 - \frac{7e}{3} + \frac{25e^{10}}{3}$ millions of euros = 183617.539 millions of euros

4) $70 - \frac{7e}{3} + \frac{13e^4}{3}$ millions of euros = 300.2493 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \cos(-7 + 7t)$ euros.

Compute the average value of the shares along the first π months of the year (between t=0 and t=π).

1) $50 + \frac{2\,\text{Sin}[7]}{7\pi}$ euros = 50.0598 euros

2) $-30 + \frac{2\,\text{Sin}[7]}{7\pi}$ euros = −29.9402 euros

3) $-70 + \frac{2\,\text{Sin}[7]}{7\pi}$ euros = −69.9402 euros

4) $\frac{2\,\text{Sin}[7]}{7\pi}$ euros = 0.0598 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 9x + 6x^2 - 3x^3$ and the horizontal axis between the points x=1 and x=4.

1) $\frac{9}{4} = 2.25$

2) $\frac{227}{4} = 56.75$

3) $\frac{215}{4} = 53.75$

4) $\frac{221}{4} = 55.25$

5) $\frac{225}{4} = 56.25$

6) $\frac{229}{4} = 57.25$

7) $\frac{223}{4} = 55.75$

8) $\frac{231}{4} = 57.75$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\cos(5 + 6t)$ per-unit.

The initial deposit in the account is 18 000 euros. Compute the deposit after 2π years.

1) 17 910 euros

2) 18 000 euros

3) 17 920 euros

4) 18 080 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 21055224

Exercise 1

Compute $\int_{-2a}^{1} (-1 - 8a - 8t + 4at + 3t^2 + 24at^2 + 16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -9

2) 5

3) The rest of the solutions are not correct

4) -6

5) 4

6) 0

Exercise 2

Compute $\int_{-6}^{-5} (\text{Log}[-2t])\,dt$

1) -10.7764

2) -4.75106

3) 2.39651

4) -20.892

5) -11.0002

6) -10.4416

Exercise 3

Compute $\int_{-3}^{-2} \left(\frac{486}{(-1-3t)^4}\right)dt$

1) -4.5901

2) -4.35701

3) -1.98249

4) 0.326531

5) -4.49668

6) 9881.

Exercise 4

Compute $\int_4^5 \left(\frac{-10-6a-5t+3at}{-4+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 0.712152

2) -0.214048

3) The rest of the solutions are not correct

4) 0.684152

5) 0.137152

6) 0.462452

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (5+3t)e^{-3+2t}$ millions of euros/year.

If the initial deposit in the investment fund was 40 millions of euros, compute the depositis available after 2 years.

1) $40 - \frac{7}{4e^3} + \frac{19e}{4}$ millions of euros = 52.8247 millions of euros

2) $40 - \frac{7}{4e^3} + \frac{13}{4e}$ millions of euros = 41.1085 millions of euros

3) $40 + \frac{1}{4e^5} - \frac{7}{4e^3}$ millions of euros = 39.9146 millions of euros

4) $40 - \frac{7}{4e^3} + \frac{25e^3}{4}$ millions of euros = 165.4475 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 20e^{2+2t}$ euros.

Compute the average value of the shares along the first 5 months of the year (between t=0 and t=5).

1) $\frac{1}{5}\left(-10e^2 + 10e^4\right)$ euros = 94.4182 euros

2) $\frac{1}{5}\left(10 - 10e^2\right)$ euros = -12.7781 euros

3) $\frac{1}{5}\left(-10e^2 + 10e^6\right)$ euros = 792.0795 euros

4) $\frac{1}{5}\left(-10e^2 + 10e^{12}\right)$ euros = 325494.8047 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -12 + 3x^2$ and the horizontal axis between the points $x=-2$ and $x=4$.

1) $\frac{131}{2} = 65.5$

2) 64

3) 67

4) 68

5) 0

6) 66

7) $\frac{133}{2} = 66.5$

8) $\frac{135}{2} = 67.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{13} e^{-4+2t}$ per-unit.

The initial deposit in the account is 5000 euros. Compute the deposit after 2 years.

1) 5262.3947 euros

2) 5192.3947 euros

3) 5202.3947 euros

4) 5282.3947 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 26052770

Exercise 1

Compute $\int_{-2a}^{3} (-4 + 20a + 20t - 24at - 18t^2 + 6at^2 + 4t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -3

2) -16

3) The rest of the solutions are not correct

4) -6

5) -20

6) -2

Exercise 2

Compute $\int_{0}^{1} (e^{-3+2t} (8 + 12t - 12t^2))\,dt$

1) -6.10414

2) -7.36023

3) -4.65171

4) -6.30196

5) 3.67879

6) 1.57109

Exercise 3

Compute $\int_{-9}^{-1} (\frac{9}{t^4})\,dt$

1) 2.99588

2) -11.6399

3) -12.0171

4) -8.87026

5) -6.15083×10^7

6) -14.0351

Exercise 4

Compute $\int_3^5 \left(\frac{-2+t-4\,a\,t}{-2\,t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −4.97765

2) −4.70525

3) −4.39445

4) −4.59045

5) −4.63905

6) The rest of the solutions are not correct

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (7+4\,t)\,(\sin(2\pi t)+2)$ millions of euros/year.

If the initial deposit in the investment fund was 80 millions of euros, compute the depositis available after 4 years.

1) $70+\frac{2}{\pi}$ millions of euros = 70.6366 millions of euros

2) $98-\frac{2}{\pi}$ millions of euros = 97.3634 millions of euros

3) $200-\frac{8}{\pi}$ millions of euros = 197.4535 millions of euros

4) $124-\frac{4}{\pi}$ millions of euros = 122.7268 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (3+6\,t)\,(\sin(2\pi t)+2)$ euros.

Compute the average value of the shares along the first 6 months of the year (between t=0 and t=6).

1) $\frac{1}{6}\left(36-\frac{6}{\pi}\right)$ euros = 5.6817 euros

2) $\frac{1}{6}\left(12-\frac{3}{\pi}\right)$ euros = 1.8408 euros

3) $\frac{1}{6}\left(252-\frac{18}{\pi}\right)$ euros = 41.0451 euros

4) $\frac{1}{2\pi}$ euros = 0.1592 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 2x - x^2$ and the horizontal axis between the points $x=-4$ and $x=5$.

1) $\frac{349}{6} = 58.1667$

2) $\frac{179}{3} = 59.6667$

3) $\frac{361}{6} = 60.1667$

4) $\frac{176}{3} = 58.6667$

5) $\frac{170}{3} = 56.6667$

6) 18

7) 54

8) $\frac{62}{3} = 20.6667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(3 + 6t)\right)(\sin(2\pi t) + 2)$ per-unit.

The initial deposit in the account is 13 000 euros. Compute the deposit after 5 years.

1) 74978.6101 euros

2) 74988.6101 euros

3) 75008.6101 euros

4) 75038.6101 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 26256869

Exercise 1

Compute $\int_a^1 (-6 + 9a - 18t - 2at + 3t^2 - 6at^2 + 8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -6

2) The rest of the solutions are not correct

3) 12

4) -8

5) 2

6) 5

Exercise 2

Compute $\int_0^1 ((2 + 2t + 2t^2)\,\mathrm{Cos}[t])\,dt$

1) -8.34004

2) -6.30681

3) -12.066

4) -9.52203

5) 2.92476

6) -11.9251

Exercise 3

Compute $\int_2^4 \left(\frac{7}{t^4}\right)dt$

1) -2.85154

2) 0.255208

3) -4.12546

4) -338 603.

5) -3.25567

6) -4.07731

Exercise 4

Compute $\int_4^7 \left(\frac{4-4a-4t+2at}{2-3t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) 1.73089

2) 1.17039

3) 0.535994

4) The rest of the solutions are not correct

5) 2.03739

6) 1.38629

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t)=20\,e^{-2+2t}$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 2 years.

1) $90-\frac{10}{e^2}+10\,e^4$ millions of euros = 634.6281 millions of euros

2) $90-\frac{10}{e^2}+10\,e^2$ millions of euros = 162.5372 millions of euros

3) $100-\frac{10}{e^2}$ millions of euros = 98.6466 millions of euros

4) $90+\frac{10}{e^4}-\frac{10}{e^2}$ millions of euros = 88.8298 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=(-1+4t)\sin(2t)$ euros.

Compute the average value of the shares along the first 3π months of the year (between t=0 and t=3π).

1) $-\frac{2}{3}$ euros = −0.6667 euros

2) $\frac{2}{3}$ euros = 0.6667 euros

3) −2 euros

4) $-\frac{4}{3}$ euros = −1.3333 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -4 + 6x - 2x^2$ and the horizontal axis between the points x=1 and x=4.

1) $\frac{73}{6} = 12.1667$

2) $\frac{41}{3} = 13.6667$

3) $\frac{38}{3} = 12.6667$

4) $\frac{44}{3} = 14.6667$

5) $\frac{35}{3} = 11.6667$

6) $\frac{67}{6} = 11.1667$

7) $\frac{29}{3} = 9.6667$

8) $\frac{85}{6} = 14.1667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(-1 + 4t)\right)\sin(t)$ per-unit.

The initial deposit in the account is 10000 euros. Compute the deposit after 5π years.

1) 18383.3937 euros

2) 18373.3937 euros

3) 18433.3937 euros

4) 18283.3937 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 26523012

Exercise 1

Compute $\int_{-3a}^{3} (6a + 4t - 18at - 9t^2 + 9at^2 + 4t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 19

2) 18

3) 34

4) The rest of the solutions are not correct

5) 32

6) 17

Exercise 2

Compute $\int_{0}^{1} ((12t + 12t^2)\, \text{Cos}[3 + 2t])\, dt$

1) -12.6564

2) -4.79462

3) -2.68402

4) 2.83662

5) -12.4448

6) -11.3346

Exercise 3

Compute $\int_{-5}^{-3} \left(-\frac{64}{(-1-2t)^3}\right) dt$

1) -4.22299

2) -4.12152

3) -4.71547

4) -0.442469

5) 2968.

6) -4.63662

Exercise 4

Compute $\int_{4}^{5}\left(\frac{10-3a+5t+at}{-6-t+t^2}\right)dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) −0.645349

2) The rest of the solutions are not correct

3) −0.294449

4) −0.442249

5) 0.154151

6) 0.671151

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t)=3+3t^2+2t^4$ millions of euros/year.

If the initial deposit in the investment fund was 50 millions of euros, compute the depositis available after 3 years.

1) $\frac{384}{5}$ millions of euros = 76.8 millions of euros

2) $\frac{916}{5}$ millions of euros = 183.2 millions of euros

3) $\frac{272}{5}$ millions of euros = 54.4 millions of euros

4) $\frac{2678}{5}$ millions of euros = 535.6 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=10\,e^{1+2t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $\frac{1}{8}\left(-5e+5e^3\right)$ euros = 10.8545 euros

2) $\frac{1}{8}\left(\frac{5}{e}-5e\right)$ euros = −1.469 euros

3) $\frac{1}{8}\left(-5e+5e^{17}\right)$ euros = 1.5097×10^7 euros

4) $\frac{1}{8}\left(-5e+5e^5\right)$ euros = 91.0593 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -12x - 2x^2 + 2x^3$ and the horizontal axis between the points $x=-4$ and $x=4$.

1) $\frac{451}{3} = 150.3333$

2) 64

3) $\frac{454}{3} = 151.3333$

4) $\frac{911}{6} = 151.8333$

5) $\frac{256}{3} = 85.3333$

6) $\frac{905}{6} = 150.8333$

7) $\frac{445}{3} = 148.3333$

8) $\frac{457}{3} = 152.3333$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{e^{-3+t}}{9}$ per-unit.

The initial deposit in the account is 20 000 euros. Compute the deposit after 3 years.

1) 22247.0827 euros

2) 22227.0827 euros

3) 22297.0827 euros

4) 22267.0827 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 48143225

Exercise 1

Compute $\int_{-3a}^{-3} (9 + 18 a + 12 t - 48 a t - 24 t^2 - 27 a t^2 - 12 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −13

2) 0

3) −8

4) −10

5) The rest of the solutions are not correct

6) 2

Exercise 2

Compute $\int_{-1}^{1} (-3 \operatorname{Cos}[1 + 3 t]) \, dt$

1) 1.6661

2) −2.65229

3) −3.94285

4) 3.20937

5) −3.65062

6) −0.152495

Exercise 3

Compute $\int_{-6}^{0} \left(-\frac{27}{1 - 3 t}\right) dt$

1) −2.94444

2) −70.2855

3) −104.485

4) −26.5

5) −96.7413

6) −54.7088

Exercise 4

Compute $\int_4^5 \left(\frac{6-15a-2t-5at}{-9+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) -3.83834

2) -3.28184

3) -4.01884

4) The rest of the solutions are not correct

5) -3.46574

6) -3.91254

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (4+t)\log(2t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 40 millions euros, compute the deposit available after (with respect to t=1) 2 years.

1) $18 - \frac{9\,\text{Log}[2]}{2} + \frac{65\,\text{Log}[10]}{2}$ millions of euros = 89.7149 millions of euros

2) $\frac{97}{4} - \frac{9\,\text{Log}[2]}{2} + 24\,\text{Log}[8]$ millions of euros = 71.0374 millions of euros

3) $100 - \frac{9\,\text{Log}[2]}{2} + \frac{33\,\text{Log}[6]}{2}$ millions of euros = 126.4449 millions of euros

4) $30 - \frac{9\,\text{Log}[2]}{2} + \frac{33\,\text{Log}[6]}{2}$ millions of euros = 56.4449 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (2+2t)\log(t)$ euros.

Compute the average value of shares between month 1 and month 3 (between t=1 and t=3).

1) $\frac{1}{2}\left(-\frac{27}{2} + 24\,\text{Log}[4]\right)$ euros = 9.8855 euros

2) $\frac{1}{3}\left(-\frac{27}{2} + 24\,\text{Log}[4]\right)$ euros = 6.5904 euros

3) $\frac{1}{3}(-20 + 35\,\text{Log}[5])$ euros = 12.1101 euros

4) $\frac{1}{2}(-8 + 15\,\text{Log}[3])$ euros = 4.2396 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -18 + 18x + 2x^2 - 2x^3$ and the horizontal axis between the points $x = -3$ and $x = 0$.

1) $\frac{159}{2} = 79.5$

2) $\frac{169}{2} = 84.5$

3) $\frac{161}{2} = 80.5$

4) $\frac{157}{2} = 78.5$

5) $\frac{163}{2} = 81.5$

6) 81

7) $\frac{153}{2} = 76.5$

8) $\frac{165}{2} = 82.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{4+t}{100}\right)\log(2t)$ per-unit.

In the year $t=1$ we deposint in the account 3000 euros. Compute the deposit in the account after (with respect to $t=1$) 4 years.

1) 5002.0801 euros

2) 4932.0801 euros

3) 4952.0801 euros

4) 5022.0801 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 53956072

Exercise 1

Compute $\int_{a}^{0} (-3 - 4a + 8t + 10at - 15t^2 - 12at^2 + 16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -3

2) -16

3) -11

4) 4

5) The rest of the solutions are not correct

6) -17

Exercise 2

Compute $\int_{0}^{1} ((-4 - 12t + 4t^2)\,\mathrm{Sin}[2 - 2t])\,dt$

1) 0.

2) -24.6823

3) -4.33333

4) -17.6388

5) -5.52055

6) -18.5114

Exercise 3

Compute $\int_{6}^{9} \left(\frac{2}{(-3 + t)^3}\right)dt$

1) 0.0833333

2) -4.47099

3) -607.5

4) -2.50414

5) -3.35318

6) -3.19512

Exercise 4

Compute $\int_1^3 \left(\frac{-2a+5t-at}{2t+t^2}\right)dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −0.430712

2) The rest of the solutions are not correct

3) −0.431712

4) −1.79201

5) −1.09861

6) −0.694412

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t)=3+3t^2+3t^3+t^4$ millions of euros/year.

If the initial deposit in the investment fund was 80 millions of euros, compute the depositis available after 3 years.

1) $\frac{2764}{5}$ millions of euros = 552.8 millions of euros

2) $\frac{1699}{20}$ millions of euros = 84.95 millions of euros

3) $\frac{4507}{20}$ millions of euros = 225.35 millions of euros

4) $\frac{562}{5}$ millions of euros = 112.4 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=(6+8t)e^{-1+t}$ euros.

Compute the average value of the shares along the first 3 months of the year (between t=0 and t=3).

1) $\frac{1}{3}\left(\frac{2}{e}+22e^2\right)$ euros = 54.4317 euros

2) $\frac{1}{3}\left(\frac{2}{e}+14e\right)$ euros = 12.9306 euros

3) $\frac{1}{3}\left(6+\frac{2}{e}\right)$ euros = 2.2453 euros

4) $\frac{1}{3}\left(-\frac{10}{e^2}+\frac{2}{e}\right)$ euros = −0.2059 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -2x - x^2$ and the horizontal axis between the points $x=-4$ and $x=4$.

1) 32

2) $\frac{142}{3} = 47.3333$

3) $\frac{88}{3} = 29.3333$

4) $\frac{281}{6} = 46.8333$

5) $\frac{145}{3} = 48.3333$

6) $\frac{136}{3} = 45.3333$

7) $\frac{128}{3} = 42.6667$

8) $\frac{287}{6} = 47.8333$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{3-t}{20}\right) e^{-1+t}$ per-unit.

The initial deposit in the account is 7000 euros. Compute the deposit after 1 year.

1) 7555.9419 euros

2) 7645.9419 euros

3) 7535.9419 euros

4) 7605.9419 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 74540350

Exercise 1

Compute $\int_a^0 (2a - 4t + 8at - 12t^2 - 6at^2 + 8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -9

2) 0

3) -17

4) -1

5) -15

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_{-3}^0 ((1 + 3t)\,\mathrm{Sin}[2 - t])\,dt$

1) 7.45782

2) -26.5375

3) 10.0687

4) -32.597

5) -2.97845

6) -29.5969

Exercise 3

Compute $\int_{-1}^1 \left(-\frac{192}{(-3 - 2t)^5}\right)dt$

1) 23.9616

2) -85.2638

3) -95.0934

4) -104.732

5) -3906.

6) -83.0745

Exercise 4

Compute $\int_{4}^{5} \left(\frac{-4-3a-4t+at}{-3-2t+t^2}\right) dt$
. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) 0.182322

2) 0.149422

3) 0.0216216

4) -0.144478

5) -0.449678

6) The rest of the solutions are not correct

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = t + 2t^3 + 3t^4$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 3 years.

1) $\frac{1304}{5}$ millions of euros = 260.8 millions of euros

2) $\frac{496}{5}$ millions of euros = 99.2 millions of euros

3) $\frac{4102}{5}$ millions of euros = 820.4 millions of euros

4) $\frac{358}{5}$ millions of euros = 71.6 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \sin(2+3t)$ euros.

Compute the average value of the shares along the first π months of the year (between t=0 and t=π).

1) $60 + \frac{2\,\text{Cos}[2]}{3\pi}$ euros = 59.9117 euros

2) $\frac{2\,\text{Cos}[2]}{3\pi}$ euros = -0.0883 euros

3) $-70 + \frac{2\,\text{Cos}[2]}{3\pi}$ euros = -70.0883 euros

4) $10 + \frac{2\,\text{Cos}[2]}{3\pi}$ euros = 9.9117 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -3 - 2x + x^2$ and the horizontal axis between the points $x=-5$ and $x=1$.

1) $\frac{176}{3} = 58.6667$

2) $\frac{188}{3} = 62.6667$

3) $\frac{379}{6} = 63.1667$

4) 48

5) $\frac{182}{3} = 60.6667$

6) $\frac{373}{6} = 62.1667$

7) $\frac{185}{3} = 61.6667$

8) $\frac{367}{6} = 61.1667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\sin(-2 + 3t)$ per-unit.

The initial deposit in the account is 7000 euros. Compute the deposit after 2π years.

1) 7000 euros

2) 6930 euros

3) 7070 euros

4) 7050 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 75573701

Exercise 1

Compute $\int_{-3a}^{2} (-10 - 21 a - 14 t + 42 a t + 21 t^2 + 36 a t^2 + 16 t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 115

2) The rest of the solutions are not correct

3) 104

4) 102

5) 113

6) 108

Exercise 2

Compute $\int_{0}^{1} (-(-12 - 8 t + 8 t^2) \operatorname{Sin}[2 + 2 t])\, dt$

1) -5.58369

2) 4.35762

3) -6.13683

4) 1.59498

5) -5.56012

6) -10.0907

Exercise 3

Compute $\int_{2}^{3} \left(\frac{1024}{(-2 + 4 t)^5}\right) dt$

1) -3.50078

2) -238 336.

3) 0.0429827

4) -3.486

5) -3.84758

6) -3.2424

Exercise 4

Compute $\int_6^7 \left(\frac{4-10a+2t+5at}{-4+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) -0.391785

2) 0.120515

3) The rest of the solutions are not correct

4) 0.588915

5) -0.289685

6) 0.532615

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (3+3t)\log(2t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 90 millions euros, compute the deposit available after (with respect to t=1) 5 years.

1) $\frac{235}{4} - \frac{9\,\text{Log}[2]}{2} + 72\,\text{Log}[12]$ millions of euros = 234.5441 millions of euros

2) $\frac{279}{4} - \frac{9\,\text{Log}[2]}{2} + 36\,\text{Log}[8]$ millions of euros = 141.4907 millions of euros

3) $60 - \frac{9\,\text{Log}[2]}{2} + \frac{105\,\text{Log}[10]}{2}$ millions of euros = 177.7666 millions of euros

4) $\frac{195}{4} - \frac{9\,\text{Log}[2]}{2} + 72\,\text{Log}[12]$ millions of euros = 224.5441 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 30\,e^{2+2t}$ euros.

Compute the average value of the shares along the first 7 months of the year (between t=0 and t=7).

1) $\frac{1}{7}\left(-15\,e^2 + 15\,e^6\right)$ euros = 848.6566 euros

2) $\frac{1}{7}\left(15 - 15\,e^2\right)$ euros = -13.6908 euros

3) $\frac{1}{7}\left(-15\,e^2 + 15\,e^4\right)$ euros = 101.1623 euros

4) $\frac{1}{7}\left(-15\,e^2 + 15\,e^{16}\right)$ euros = 1.9042×10^7 euros

Exercise 7

Compute the area enclosed by the function $f(x)=4-4x-x^2+x^3$ and the horizontal axis between the points $x=-4$ and $x=4$.

1) $\frac{361}{6} = 60.1667$

2) $\frac{32}{3} = 10.6667$

3) $\frac{527}{6} = 87.8333$

4) $\frac{515}{6} = 85.8333$

5) $\frac{248}{3} = 82.6667$

6) $\frac{503}{6} = 83.8333$

7) $\frac{256}{3} = 85.3333$

8) $\frac{521}{6} = 86.8333$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t)=\frac{1}{14}\, e^{-9+3t}$ per-unit.

The initial deposit in the account is 14 000 euros. Compute the deposit after 3 years.

1) 14377.2911 euros

2) 14337.2911 euros

3) 14427.2911 euros

4) 14327.2911 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77379111

Exercise 1

Compute $\int_a^5 (8 - 6 a + 12 t + 22 a t - 33 t^2 - 9 a t^2 + 12 t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −148

2) −122

3) −146

4) −134

5) The rest of the solutions are not correct

6) −138

Exercise 2

Compute $\int_0^1 ((9 - 18 t^2) \text{Cos}[1 + 3 t])\, dt$

1) −3.83295

2) −0.756802

3) −4.32276

4) −1.96093

5) 0.229538

6) −3.79259

Exercise 3

Compute $\int_{-6}^{-3} (\frac{9}{t^3})\, dt$

1) 607.5

2) −4.32276

3) −3.79259

4) −0.375

5) −2.62945

6) −3.83295

Exercise 4

Compute $\int_2^3 \left(\frac{-6a-3t-2at}{3t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −0.46013

2) The rest of the solutions are not correct

3) −1.33463

4) −1.09853

5) −0.81093

6) −1.41043

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t)=20\,e^{-2+t}$ millions of euros/year.

If the initial deposit in the investment fund was 80 millions of euros, compute the depositis available after 2 years.

1) $80+\frac{20}{e^3}-\frac{20}{e^2}$ millions of euros = 78.289 millions of euros

2) $80-\frac{20}{e^2}+20\,e$ millions of euros = 131.6589 millions of euros

3) $80-\frac{20}{e^2}+\frac{20}{e}$ millions of euros = 84.6509 millions of euros

4) $100-\frac{20}{e^2}$ millions of euros = 97.2933 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=(5+2t)\,e^{2t}$ euros.

Compute the average value of the shares along the first 4 months of the year (between t=0 and t=4).

1) $\frac{1}{4}\left(-2+4\,e^4\right)$ euros = 54.0982 euros

2) $\frac{1}{4}\left(-2+6\,e^8\right)$ euros = 4470.937 euros

3) $\frac{1}{4}\left(-2+3\,e^2\right)$ euros = 5.0418 euros

4) $\frac{1}{4}\left(-2+\frac{1}{e^2}\right)$ euros = −0.4662 euros

Exercise 7

Compute the area enclosed by the function $f(x)=-6x-2x^2$ and the horizontal axis between the points $x=-5$ and $x=-2$.

1) $\frac{127}{6} = 21.1667$

2) 15

3) $\frac{139}{6} = 23.1667$

4) $\frac{65}{3} = 21.6667$

5) $\frac{71}{3} = 23.6667$

6) $\frac{68}{3} = 22.6667$

7) $\frac{145}{6} = 24.1667$

8) $\frac{59}{3} = 19.6667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{3+t}{13}\right) e^{-3+t}$ per-unit.

The initial deposit in the account is 1000 euros. Compute the deposit after 1 year.

1) 1083.8517 euros

2) 1113.8517 euros

3) 1023.8517 euros

4) 1033.8517 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77388334

Exercise 1

Compute $\int_{2a}^{1} (9 - 24 a + 24 t + 8 a t - 6 t^2 + 6 a t^2 - 4 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −36

2) −52

3) −43

4) The rest of the solutions are not correct

5) −39

6) −45

Exercise 2

Compute $\int_{3}^{5} ((-8 - 12 t - 4 t^2) \operatorname{Log}[2 t]) \, dt$

1) −616.995

2) −509.439

3) −2052.16

4) −1306.06

5) −1416.63

6) −1735.75

Exercise 3

Compute $\int_{4}^{9} \left(\frac{4}{(1 - 2 t)^2}\right) dt$

1) −2.56371

2) 4570.

3) 0.168067

4) −3.40717

5) −2.45326

6) −2.78075

Exercise 4

Compute $\int_2^3 \left(\frac{-2 + 3 a - 2 t - 3 a t}{-1 + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) -1.00125

3) -0.863046

4) -1.02775

5) -0.271346

6) -0.709046

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (3 + 6 t) e^{3+t}$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 2 years.

1) $70 + 3 e^3 + 15 e^6$ millions of euros = 6181.6885 millions of euros

2) $70 - 9 e^2 + 3 e^3$ millions of euros = 63.7551 millions of euros

3) $70 + 3 e^3 + 3 e^4$ millions of euros = 294.0511 millions of euros

4) $70 + 3 e^3 + 9 e^5$ millions of euros = 1465.975 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \sin(-5 + 7 t)$ euros.

Compute the average value of the shares along the first 2π months of the year (between $t=0$ and $t=2\pi$).

1) 20 euros

2) -40 euros

3) 30 euros

4) 0 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 3 - 3x^2$ and the horizontal axis between the points $x=-3$ and $x=1$.

1) 28

2) $\frac{53}{2} = 26.5$

3) 16

4) $\frac{51}{2} = 25.5$

5) $\frac{55}{2} = 27.5$

6) 24

7) $\frac{57}{2} = 28.5$

8) 27

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\sin(3+t)$ per-unit.

The initial deposit in the account is 20 000 euros. Compute the deposit after 2π years.

1) 19 970 euros

2) 19 980 euros

3) 20 010 euros

4) 20 000 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77434209

Exercise 1

Compute $\int_a^3 (-3 - 5 a + 10 t + 6 a t - 9 t^2 - 3 a t^2 + 4 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 63

2) 81

3) 57

4) 87

5) 68

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_2^3 ((-1 + 3 t) \text{Log}[t]) \, dt$

1) 8.76284

2) -24.6493

3) -25.3338

4) -21.3722

5) 6.01284

6) -24.5644

Exercise 3

Compute $\int_{-6}^{-5} \left(\frac{8}{(3 + 2 t)^3}\right) dt$

1) -4.08532

2) -0.016125

3) -4.21328

4) -4.09945

5) 2080.

6) -3.55443

Exercise 4

Compute $\int_2^3 \left(\frac{-a+2t+at}{-t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 0.757765

3) 0.405465

4) −0.479535

5) 0.119565

6) −0.0648349

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 2t + 3t^2 + 3t^3$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 3 years.

1) $\frac{371}{4}$ millions of euros = 92.75 millions of euros

2) 362 millions of euros

3) 114 millions of euros

4) $\frac{747}{4}$ millions of euros = 186.75 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (6 + 6t)\, e^{-1+2t}$ euros.

Compute the average value of the shares along the first 9 months of the year (between t=0 and t=9).

1) $\frac{1}{9}\left(-\frac{3}{2e} + \frac{57 e^{17}}{2}\right)$ euros = 7.6491×10^7 euros

2) $\frac{1}{9}\left(-\frac{3}{2e^3} - \frac{3}{2e}\right)$ euros = −0.0696 euros

3) $\frac{1}{9}\left(-\frac{3}{2e} + \frac{9e}{2}\right)$ euros = 1.2978 euros

4) $\frac{1}{9}\left(-\frac{3}{2e} + \frac{15 e^3}{2}\right)$ euros = 16.6766 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -6x + 3x^2 + 3x^3$ and the horizontal axis between the points $x = -2$ and $x = 3$.

1) $\frac{303}{4} = 75.75$

2) $\frac{295}{4} = 73.75$

3) $\frac{297}{4} = 74.25$

4) $\frac{275}{4} = 68.75$

5) $\frac{301}{4} = 75.25$

6) $\frac{285}{4} = 71.25$

7) $\frac{211}{4} = 52.75$

8) $\frac{293}{4} = 73.25$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = (\frac{1}{18}(-2 + 3t))\, e^{-2+3t}$ per-unit.

The initial deposit in the account is 18 000 euros. Compute the deposit after 1 year.

1) 18225.8453 euros

2) 18155.8453 euros

3) 18135.8453 euros

4) 18215.8453 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77435467

Exercise 1

Compute $\int_{-2a}^{1} (-4 + 10 a + 10 t - 8 a t - 6 t^2 + 6 a t^2 + 4 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 0

3) -9

4) 3

5) -20

6) 5

Exercise 2

Compute $\int_{-6}^{-1} ((-6 - 3 t) \operatorname{Log}[-3 t]) \, dt$

1) -279.112

2) -255.575

3) 60.7204

4) -214.559

5) -204.604

6) 56.9704

Exercise 3

Compute $\int_{-9}^{1} \left(-\frac{5120}{(5 - 4 t)^5}\right) dt$

1) -1346.89

2) -320.

3) -1470.94

4) 1.18753×10^9

5) -1130.74

6) -1094.66

Exercise 4

Compute $\int_3^5 \left(\frac{6 - 4 a + 2 t + 2 a t}{-6 + t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) -0.112636

2) The rest of the solutions are not correct

3) 0.455964

4) 0.575364

5) 0.848664

6) 0.169364

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 30\, e^{2 t}$ millions of euros/year.

If the initial deposit in the investment fund was 30 millions of euros, compute the depositis available after 1 year.

1) $15 + 15\, e^6$ millions of euros = 6066.4319 millions of euros

2) $15 + 15\, e^4$ millions of euros = 833.9723 millions of euros

3) $15 + \frac{15}{e^2}$ millions of euros = 17.03 millions of euros

4) $15 + 15\, e^2$ millions of euros = 125.8358 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 3 t + 3 t^4$ euros.

Compute the average value of the shares along the first 9 months of the year (between t=0 and t=9).

1) $\frac{177}{10}$ euros = 17.7 euros

2) $\frac{7}{30}$ euros = 0.2333 euros

3) $\frac{14}{5}$ euros = 2.8 euros

4) $\frac{39501}{10}$ euros = 3950.1 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -18x + 3x^2 + 3x^3$ and the horizontal axis between the points $x = -5$ and $x = 2$.

1) $\frac{411}{4} = 102.75$

2) $\frac{789}{4} = 197.25$

3) $\frac{925}{4} = 231.25$

4) $\frac{917}{4} = 229.25$

5) $\frac{923}{4} = 230.75$

6) $\frac{539}{4} = 134.75$

7) $\frac{927}{4} = 231.75$

8) $\frac{929}{4} = 232.25$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{100}\left(t + t^3 + 2t^4\right)$ per-unit.

The initial deposit in the account is 16 000 euros. Compute the deposit after 2 years.

1) 19329.3362 euros

2) 19289.3362 euros

3) 19319.3362 euros

4) 19309.3362 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77647383

Exercise 1

Compute $\int_{3a}^{5} (-12 - 15 a + 10 t + 36 a t - 18 t^2 + 27 a t^2 - 12 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1533

2) 1551

3) 1536

4) The rest of the solutions are not correct

5) 1548

6) 1542

Exercise 2

Compute $\int_{-1}^{0} (-3 \operatorname{Cos}[1 + 2 t]) \, dt$

1) -2.52441

2) 1.26221

3) -9.44564

4) -10.7924

5) -10.0694

6) -10.5683

Exercise 3

Compute $\int_{4}^{6} \left(\frac{1}{t}\right) dt$

... N: Internal precision limit $MaxExtraPrecision = 50.` reached while evaluating $-\text{Log}\left[\frac{3}{2}\right] - \text{Log}[4] + \text{Log}[6]$.

1) 0.405465

2) -3.98881

3) -3.74172

4) -4.27521

5) -3.5919

6) -4.18643

Exercise 4

Compute $\int_1^2 (\frac{6a - t + 3at}{2t + t^2})\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 1.54634

3) 2.01234

4) 2.07944

5) 1.83514

6) 1.46244

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (1 + 2t)e^t$ millions of euros/year.

If the initial deposit in the investment fund was 80 millions of euros, compute the depositis available after 1 year.

1) $81 - \frac{3}{e}$ millions of euros = 79.8964 millions of euros

2) $81 + 3e^2$ millions of euros = 103.1672 millions of euros

3) $81 + e$ millions of euros = 83.7183 millions of euros

4) $81 + 5e^3$ millions of euros = 181.4277 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (1 + 2t)e^{1+2t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $-\frac{1}{8e}$ euros = -0.046 euros

2) $\frac{e^3}{8}$ euros = 2.5107 euros

3) e^{17} euros = 2.4155×10^7 euros

4) $\frac{e^5}{4}$ euros = 37.1033 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 12x + 10x^2 + 2x^3$ and the horizontal axis between the points $x = -3$ and $x = 4$.

1) $\frac{2587}{6} = 431.1667$

2) 447

3) 445

4) $\frac{895}{2} = 447.5$

5) $\frac{2597}{6} = 432.8333$

6) $\frac{891}{2} = 445.5$

7) $\frac{893}{2} = 446.5$

8) $\frac{887}{2} = 443.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1-t}{210678}\right) e^{3t}$ per-unit.

The initial deposit in the account is 13 000 euros. Compute the deposit after 3 years.

1) 12765.1392 euros

2) 12745.1392 euros

3) 12815.1392 euros

4) 12725.1392 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77648906

Exercise 1

Compute $\int_{2a}^{-5} (-4 + 36\,a\,t - 27\,t^2 + 30\,a\,t^2 - 20\,t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −790

2) −808

3) −792

4) −801

5) The rest of the solutions are not correct

6) −797

Exercise 2

Compute $\int_{2}^{6} (-3\,\mathrm{Log}[3\,t])\,dt$

1) −135.682

2) −29.2761

3) −194.659

4) −95.6192

5) −41.2761

6) −108.239

Exercise 3

Compute $\int_{-8}^{-6} \left(-\frac{15}{5 - 5\,t}\right)dt$

1) −3.69719

2) −3.26611

3) −3.2605

4) −4.63456

5) −0.753943

6) −0.251314

Exercise 4

Compute $\int_5^6 \left(\frac{-3+5a+t-5at}{3-4t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) −2.76243

2) −2.06643

3) −2.55033

4) The rest of the solutions are not correct

5) −1.76893

6) −2.70683

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (2+t)\log(2t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 20 millions euros, compute the deposit available after (with respect to t=1) 2 years.

1) $6 - \frac{5 \text{Log}[2]}{2} + \frac{45 \text{Log}[10]}{2}$ millions of euros = 56.0753 millions of euros

2) $14 - \frac{5 \text{Log}[2]}{2} + \frac{21 \text{Log}[6]}{2}$ millions of euros = 31.0806 millions of euros

3) $-6 - \frac{5 \text{Log}[2]}{2} + \frac{21 \text{Log}[6]}{2}$ millions of euros = 11.0806 millions of euros

4) $\frac{41}{4} - \frac{5 \text{Log}[2]}{2} + 16 \text{Log}[8]$ millions of euros = 41.7882 millions of euros

Exercise 6

The true value of certain shares oscillates along the year.
The following function yields the value of the shares for each month t:

$V(t) = (2+t)\log(2t)$ euros.

Compute the average value of shares between month 1 and month 3 (between t=1 and t=3).

1) $\frac{1}{2}\left(-6 - \frac{5 \text{Log}[2]}{2} + \frac{21 \text{Log}[6]}{2}\right)$ euros = 5.5403 euros

2) $\frac{1}{2}\left(-\frac{39}{4} - \frac{5 \text{Log}[2]}{2} + 16 \text{Log}[8]\right)$ euros = 10.8941 euros

3) $\frac{1}{3}\left(-14 - \frac{5 \text{Log}[2]}{2} + \frac{45 \text{Log}[10]}{2}\right)$ euros = 12.0251 euros

4) $\frac{1}{3}\left(-\frac{39}{4} - \frac{5 \text{Log}[2]}{2} + 16 \text{Log}[8]\right)$ euros = 7.2627 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -18 + 15x + 6x^2 - 3x^3$ and the horizontal axis between the points $x=-3$ and $x=5$.

1) $\frac{451}{2} = 225.5$

2) 224

3) $\frac{445}{2} = 222.5$

4) 128

5) 225

6) 96

7) $\frac{381}{2} = 190.5$

8) $\frac{449}{2} = 224.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{2+t}{100}\right) \log(2t)$ per-unit.

In the year $t=1$ we deposint in the account 17000 euros. Compute the deposit in the account after (with respect to $t=1$) 5 years.

1) 29280.8896 euros

2) 29170.8896 euros

3) 29190.8896 euros

4) 29200.8896 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 77770524

Exercise 1

Compute $\int_{-a}^{3}(-6-5a-10t-26at-39t^2-12at^2-16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) −263

3) −246

4) −251

5) −252

6) −259

Exercise 2

Compute $\int_{-5}^{-4}((-4-12t-4t^2)\,\mathrm{Log}[-2t])\,dt$

1) −313.464

2) 215.779

3) −73.3378

4) −308.081

5) −290.667

6) −69.2267

Exercise 3

Compute $\int_{-6}^{-3}\left(-\frac{9216}{(4-4t)^5}\right)dt$

1) −3.12174

2) −0.00785195

3) 1.16278×10^8

4) −4.45032

5) −4.19878

6) −4.52808

Exercise 4

Compute $\int_3^4 \left(\frac{6+8a+2t-4at}{-6+t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) −0.443003

2) −1.4896

3) −1.6137

4) −0.930203

5) −1.2165

6) The rest of the solutions are not correct

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (7+3t)(\sin(2\pi t)+1)$ millions of euros/year.

If the initial deposit in the investment fund was 30 millions of euros, compute the depositis available after 4 years.

1) $50 - \frac{3}{\pi}$ millions of euros = 49.0451 millions of euros

2) $82 - \frac{6}{\pi}$ millions of euros = 80.0901 millions of euros

3) $\frac{77}{2} - \frac{3}{2\pi}$ millions of euros = 38.0225 millions of euros

4) $\frac{49}{2} + \frac{3}{2\pi}$ millions of euros = 24.9775 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 3 + 3t + 2t^2 + t^3 + 2t^4$ euros.

Compute the average value of the shares along the first 9 months of the year (between t=0 and t=9).

1) $\frac{512}{135}$ euros = 3.7926 euros

2) $\frac{57543}{20}$ euros = 2877.15 euros

3) $\frac{351}{20}$ euros = 17.55 euros

4) $\frac{349}{540}$ euros = 0.6463 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -18 + 21x - 3x^3$ and the horizontal axis between the points $x = -1$ and $x = 2$.

1) $\frac{159}{4} = 39.75$

2) $\frac{165}{4} = 41.25$

3) $\frac{153}{4} = 38.25$

4) $\frac{167}{4} = 41.75$

5) $\frac{135}{4} = 33.75$

6) $\frac{163}{4} = 40.75$

7) $\frac{161}{4} = 40.25$

8) $\frac{171}{4} = 42.75$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{3 + t}{100}$ per-unit.

The initial deposit in the account is 10000 euros. Compute the deposit after 1 year.

1) 10346.1971 euros

2) 10356.1971 euros

3) 10336.1971 euros

4) 10386.1971 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 78026316

Exercise 1

Compute $\int_a^4 (6 - 7a + 14t - 20at + 30t^2 - 12at^2 + 16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) −463

3) −452

4) −459

5) −468

6) −469

Exercise 2

Compute $\int_0^1 ((12t + 12t^2)\,\mathrm{Cos}[3 - 2t])\,dt$

1) −0.163901

2) −4.24793

3) −3.46717

4) −3.55495

5) 5.40302

6) −4.20735

Exercise 3

Compute $\int_5^7 \left(\frac{8}{(2+t)^3}\right)dt$

1) −3.46717

2) −4.24793

3) −3.15188

4) 0.0322499

5) −3.55495

6) −2080.

Exercise 4

Compute $\int_2^5 \left(\frac{4a - 5t + 2at}{2t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.08568

2) The rest of the solutions are not correct

3) 1.15808

4) 0.991781

5) 1.38218

6) 1.83258

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 10\, e^{3+2t}$ millions of euros/year.

If the initial deposit in the investment fund was 80 millions of euros, compute the depositis available after 2 years.

1) $80 - 5\, e^3 + 5\, e^7$ millions of euros = 5462.7381 millions of euros

2) $80 - 5\, e^3 + 5\, e^5$ millions of euros = 721.6381 millions of euros

3) $80 + 5\, e - 5\, e^3$ millions of euros = -6.8363 millions of euros

4) $80 - 5\, e^3 + 5\, e^9$ millions of euros = 40494.992 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (8 + 5t)\, e^{1+3t}$ euros.

Compute the average value of the shares along the first 4 months of the year (between t=0 and t=4).

1) $\frac{1}{4}\left(-\frac{19\, e}{9} + \frac{34\, e^4}{9}\right)$ euros = 50.1303 euros

2) $\frac{1}{4}\left(\frac{4}{9\, e^2} - \frac{19\, e}{9}\right)$ euros = -1.4196 euros

3) $\frac{1}{4}\left(-\frac{19\, e}{9} + \frac{49\, e^7}{9}\right)$ euros = 1491.2049 euros

4) $\frac{1}{4}\left(-\frac{19\, e}{9} + \frac{79\, e^{13}}{9}\right)$ euros = 970850.1756 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -4x - 2x^2$ and the horizontal axis between the points $x=-3$ and $x=2$.

1) $\frac{121}{6} = 20.1667$

2) $\frac{133}{6} = 22.1667$

3) $\frac{56}{3} = 18.6667$

4) $\frac{71}{3} = 23.6667$

5) $\frac{62}{3} = 20.6667$

6) $\frac{65}{3} = 21.6667$

7) $\frac{40}{3} = 13.3333$

8) 8

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1-3t}{1635}\right) e^{2+2t}$ per-unit.

The initial deposit in the account is 8000 euros. Compute the deposit after 1 year.

1) 7888.8003 euros

2) 7958.8003 euros

3) 7948.8003 euros

4) 7908.8003 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 78428692

Exercise 1

Compute $\int_{3a}^{-1}(-4+27a-18t-45at^2+20t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1

2) −19

3) 8

4) The rest of the solutions are not correct

5) −8

6) 5

Exercise 2

Compute $\int_{-2}^{2}((-6+4t)\,\mathrm{Sin}[1+2t])\,dt$

1) −16.5968

2) −15.4771

3) −9.3326

4) −19.7895

5) −25.2302

6) 5.82848

Exercise 3

Compute $\int_{6}^{7}\left(\frac{1}{(-3+t)^2}\right)dt$

1) −3.39531

2) 0.0833333

3) −37.

4) −4.32878

5) −2.84754

6) −2.65543

Exercise 4

Compute $\int_{4}^{5} \left(\frac{-10 + 10\,a + 5\,t + 5\,a\,t}{-4 + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.54483

2) 1.76283

3) 1.49623

4) 2.02733

5) 2.30333

6) The rest of the solutions are not correct

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (2 + 4\,t)\log(5\,t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 80 millions euros, compute the deposit available after (with respect to t=1) 4 years.

1) $88 - 4\,\text{Log}[5] + 60\,\text{Log}[25]$ millions of euros = 274.6948 millions of euros

2) $59 - 4\,\text{Log}[5] + 40\,\text{Log}[20]$ millions of euros = 172.3915 millions of euros

3) $35 - 4\,\text{Log}[5] + 84\,\text{Log}[30]$ millions of euros = 314.2628 millions of euros

4) $48 - 4\,\text{Log}[5] + 60\,\text{Log}[25]$ millions of euros = 234.6948 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (2 + 8\,t)\,(\cos(2\pi t) + 2)$ euros.

Compute the average value of the shares along the first 6 months of the year (between t=0 and t=6).

1) $\frac{20}{3}$ euros = 6.6667 euros

2) $\frac{2}{3}$ euros = 0.6667 euros

3) 52 euros

4) 2 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 4 - 4x - x^2 + x^3$ and the horizontal axis between the points $x = -2$ and $x = 5$.

1) $\frac{1165}{12} = 97.0833$

2) $\frac{1159}{12} = 96.5833$

3) $\frac{1189}{12} = 99.0833$

4) $\frac{1127}{12} = 93.9167$

5) $\frac{1177}{12} = 98.0833$

6) $\frac{1141}{12} = 95.0833$

7) $\frac{1171}{12} = 97.5833$

8) $\frac{857}{12} = 71.4167$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(4 + 5t)\right)(\cos(2\pi t) + 2)$ per-unit.

The initial deposit in the account is 20000 euros. Compute the deposit after 3 years.

1) 39874.3107 euros

2) 39934.3107 euros

3) 39944.3107 euros

4) 39954.3107 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 753486173

Exercise 1

Compute $\int_{3a}^{5} (-1 + 3a - 2t - 12at + 6t^2 - 18at^2 + 8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −878

2) −892

3) −902

4) −882

5) The rest of the solutions are not correct

6) −901

Exercise 2

Compute $\int_{0}^{2} (6t\,\mathrm{Cos}[1 + 2t])\,dt$

1) −30.17

2) −6.13851

3) −19.7114

4) 3.40395

5) −30.5626

6) −24.1583

Exercise 3

Compute $\int_{-4}^{-1} \left(\frac{8}{t^2}\right)dt$

1) −29.873

2) −19.2667

3) 6.

4) −23.6132

5) −504.

6) −29.4893

Exercise 4

Compute $\int_{4}^{7} \left(\frac{6-9\,a+3\,t+3\,a\,t}{-6-t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 0.350995

3) 1.2164

4) 0.671095

5) 1.1099

6) 0.688595

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (2+2\,t)\,e^{t}$ millions of euros/year.

If the initial deposit in the investment fund was 90 millions of euros, compute the depositis available after 2 years.

1) $90-\frac{2}{e}$ millions of euros = 89.2642 millions of euros

2) $90+6\,e^{3}$ millions of euros = 210.5132 millions of euros

3) $90+4\,e^{2}$ millions of euros = 119.5562 millions of euros

4) $90+2\,e$ millions of euros = 95.4366 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 20\,e^{3+3\,t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $\frac{1}{8}\left(-\frac{20\,e^{3}}{3}+\frac{20\,e^{27}}{3}\right)$ euros = 4.4337×10^{11} euros

2) $\frac{1}{8}\left(-\frac{20\,e^{3}}{3}+\frac{20\,e^{9}}{3}\right)$ euros = 6735.832 euros

3) $\frac{1}{8}\left(\frac{20}{3}-\frac{20\,e^{3}}{3}\right)$ euros = -15.9046 euros

4) $\frac{1}{8}\left(-\frac{20\,e^{3}}{3}+\frac{20\,e^{6}}{3}\right)$ euros = 319.4527 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 12x + 2x^2 - 2x^3$ and the horizontal axis between the points $x = -3$ and $x = 4$.

1) $\frac{245}{3} = 81.6667$

2) $\frac{481}{6} = 80.1667$

3) $\frac{37}{6} = 6.1667$

4) $\frac{242}{3} = 80.6667$

5) $\frac{469}{6} = 78.1667$

6) $\frac{91}{6} = 15.1667$

7) $\frac{487}{6} = 81.1667$

8) $\frac{239}{3} = 79.6667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{12} e^{-6+2t}$ per-unit.

The initial deposit in the account is 20000 euros. Compute the deposit after 3 years.

1) 20848.7847 euros

2) 20858.7847 euros

3) 20838.7847 euros

4) 20850.019 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 10618500094

Exercise 1

Compute $\int_{-2a}^{3} (6a + 6t - 8at - 6t^2 - 6at^2 - 4t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −90

2) The rest of the solutions are not correct

3) −88

4) −74

5) −72

6) −68

Exercise 2

Compute $\int_{-4}^{-1} ((18t - 9t^2) \mathrm{Log}[-3t])\, dt$

1) −691.245

2) −3302.33

3) −2157.35

4) −821.745

5) 1994.53

6) −1725.8

Exercise 3

Compute $\int_{-1}^{9} \left(\frac{243}{(4 + 3t)^5}\right) dt$

1) −50.5572

2) −63.1994

3) -2.21876×10^8

4) 20.25

5) −48.917

6) −96.7414

Exercise 4

Compute $\int_3^4 \left(\frac{5+8a-5t+4at}{-2+t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 0.86576

3) 0.75666

4) 1.62186

5) 0.98066

6) 1.67786

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (9+5t)(\cos(2\pi t)+1)$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 3 years.

1) 98 millions of euros

2) $\frac{163}{2}$ millions of euros = 81.5 millions of euros

3) $\frac{127}{2}$ millions of euros = 63.5 millions of euros

4) $\frac{239}{2}$ millions of euros = 119.5 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (2-4t)\cos(3t)$ euros.

Compute the average value of the shares along the first 3π months of the year (between $t=0$ and $t=3\pi$).

1) $70+\frac{8}{27\pi}$ euros = 70.0943 euros

2) 0 euros

3) $10+\frac{8}{27\pi}$ euros = 10.0943 euros

4) $\frac{8}{27\pi}$ euros = 0.0943 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -6x + 3x^2 + 3x^3$ and the horizontal axis between the points $x = -1$ and $x = 2$.

1) $\frac{45}{4} = 11.25$

2) $\frac{65}{4} = 16.25$

3) $\frac{69}{4} = 17.25$

4) $\frac{63}{4} = 15.75$

5) $\frac{55}{4} = 13.75$

6) $\frac{19}{4} = 4.75$

7) $\frac{71}{4} = 17.75$

8) $\frac{67}{4} = 16.75$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(-5 + 3t)\right)\cos(2t)$ per-unit.

The initial deposit in the account is 6000 euros. Compute the deposit after 3π years.

1) 6000 euros

2) 6010 euros

3) 6050 euros

4) 6040 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 10901600079

Exercise 1

Compute $\int_{2a}^{5} \left(-10\,a + 10\,t + 30\,a\,t^2 - 20\,t^3\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1186

2) 1180

3) 1192

4) 1197

5) 1190

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_{0}^{1} \left(e^{-1+t} \left(-2 - t + t^2\right)\right) dt$

1) -1.36788

2) -3.39838

3) -3.34061

4) -2.53885

5) -4.17169

6) -4.4322

Exercise 3

Compute $\int_{-3}^{-1} \left(\frac{576}{(-1 + 4\,t)^3}\right) dt$

1) -7.48397

2) -7.95134

3) -5.99303

4) 13 968.

5) -2.45396

6) -6.09666

Exercise 4

Compute $\int_{2}^{4}\left(\frac{-3+12\,a+3\,t+4\,a\,t}{-3+2\,t+t^{2}}\right)dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 3.95645

2) The rest of the solutions are not correct

3) 4.99395

4) 3.81345

5) 4.39445

6) 3.79075

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (6+6\,t)\,(\sin(2\pi t)+2)$ millions of euros/year.

If the initial deposit in the investment fund was 20 millions of euros, compute the depositis available after 4 years.

1) $38-\frac{3}{\pi}$ millions of euros = 37.0451 millions of euros

2) $68-\frac{6}{\pi}$ millions of euros = 66.0901 millions of euros

3) $164-\frac{12}{\pi}$ millions of euros = 160.1803 millions of euros

4) $14+\frac{3}{\pi}$ millions of euros = 14.9549 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (3-4\,t)\sin(6\,t)$ euros.

Compute the average value of the shares along the first 2π months of the year (between t=0 and t=2π).

1) $-\frac{1}{3}$ euros = -0.3333 euros

2) 1 euros

3) $\frac{1}{3}$ euros = 0.3333 euros

4) $\frac{2}{3}$ euros = 0.6667 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -6 + 4x + 2x^2$ and the horizontal axis between the points x=1 and x=5.

1) $\frac{667}{6} = 111.1667$

2) $\frac{329}{3} = 109.6667$

3) $\frac{338}{3} = 112.6667$

4) $\frac{335}{3} = 111.6667$

5) $\frac{320}{3} = 106.6667$

6) $\frac{649}{6} = 108.1667$

7) $\frac{332}{3} = 110.6667$

8) $\frac{326}{3} = 108.6667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = (\frac{1}{100}(3 - 4t))\sin(6t)$ per-unit.

The initial deposit in the account is 17 000 euros. Compute the deposit after 4π years.

1) 18415.5463 euros

2) 18455.5463 euros

3) 18485.5463 euros

4) 18495.5463 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 11116551121

Exercise 1

Compute $\int_{a}^{-1} (12 + 11\,a - 22\,t + 16\,a\,t - 24\,t^2 + 3\,a\,t^2 - 4\,t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -16

2) -20

3) -35

4) -36

5) -22

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_{0}^{1} ((-2 - 2\,t + t^2)\,\mathrm{Sin}[1 - t])\,dt$

1) -1.15585

2) -4.64673

3) 0.

4) -2.66667

5) -4.94023

6) -4.03587

Exercise 3

Compute $\int_{5}^{9} \left(\frac{5625}{(-3 - 5\,t)^4}\right)dt$

1) -4.02019

2) -1.6843

3) -4.27411

4) 0.0136919

5) 7.91979×10^7

6) -3.49169

Exercise 4

Compute $\int_5^6 \left(\frac{-5 + a - 5t - at}{-1 + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −0.154151

2) −0.379551

3) 0.145049

4) The rest of the solutions are not correct

5) −0.598351

6) −0.901351

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 3t^2 + t^3 + 2t^4$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 3 years.

1) $\frac{3038}{5}$ millions of euros = 607.6 millions of euros

2) $\frac{4289}{20}$ millions of euros = 214.45 millions of euros

3) $\frac{1433}{20}$ millions of euros = 71.65 millions of euros

4) $\frac{474}{5}$ millions of euros = 94.8 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \sin(-4 + 8t)$ euros.

Compute the average value of the shares along the first 3π months of the year (between $t=0$ and $t=3\pi$).

1) −20 euros

2) 0 euros

3) 70 euros

4) 40 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -1 + x^2$ and the horizontal axis between the points $x=-5$ and $x=0$.

1) $\frac{110}{3} = 36.6667$

2) $\frac{79}{2} = 39.5$

3) $\frac{85}{2} = 42.5$

4) $\frac{81}{2} = 40.5$

5) 41

6) 38

7) $\frac{83}{2} = 41.5$

8) 42

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\sin(-2 + 4t)$ per-unit.

The initial deposit in the account is 17 000 euros. Compute the deposit after 3π years.

1) 16 950 euros

2) 17 000 euros

3) 17 070 euros

4) 17 040 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 20531650581

Exercise 1

Compute $\int_{-2a}^{5} (4a + 4t - 12at - 9t^2 - 12at^2 - 8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −631

2) The rest of the solutions are not correct

3) −630

4) −643

5) −639

6) −649

Exercise 2

Compute $\int_{2}^{3} (e^{-1-2t}(4 + 4t))\,dt$

1) −3.60903

2) −2.96293

3) −3.28584

4) −3.84426

5) −0.0804507

6) 0.0389587

Exercise 3

Compute $\int_{-9}^{-5} \left(\frac{64}{(-2 - 2t)^4}\right)\,dt$

1) −2.96293

2) −3.60903

3) 338 603.

4) 0.0182292

5) −3.28584

6) −3.84426

Exercise 4

Compute $\int_3^4 \left(\frac{6+8a+3t-4at}{-4+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −1.27899

2) The rest of the solutions are not correct

3) −1.33869

4) −1.37439

5) −0.729286

6) −0.817786

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (6+t)(\sin(2\pi t)+2)$ millions of euros/year.

If the initial deposit in the investment fund was 50 millions of euros, compute the depositis available after 5 years.

1) $63 - \frac{1}{2\pi}$ millions of euros = 62.8408 millions of euros

2) $39 + \frac{1}{2\pi}$ millions of euros = 39.1592 millions of euros

3) $78 - \frac{1}{\pi}$ millions of euros = 77.6817 millions of euros

4) $135 - \frac{5}{2\pi}$ millions of euros = 134.2042 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 20\,e^{3+2t}$ euros.

Compute the average value of the shares along the first 6 months of the year (between t=0 and t=6).

1) $\frac{1}{6}\left(10\,e - 10\,e^3\right)$ euros = −28.9454 euros

2) $\frac{1}{6}\left(-10\,e^3 + 10\,e^5\right)$ euros = 213.8794 euros

3) $\frac{1}{6}\left(-10\,e^3 + 10\,e^7\right)$ euros = 1794.246 euros

4) $\frac{1}{6}\left(-10\,e^3 + 10\,e^{15}\right)$ euros = 5.4483×10^6 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 8 - 2x^2$ and the horizontal axis between the points $x=-2$ and $x=4$.

1) $\frac{137}{3} = 45.6667$

2) $\frac{271}{6} = 45.1667$

3) $\frac{265}{6} = 44.1667$

4) $\frac{128}{3} = 42.6667$

5) 0

6) $\frac{140}{3} = 46.6667$

7) $\frac{134}{3} = 44.6667$

8) $\frac{283}{6} = 47.1667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{12} e^{-6+3t}$ per-unit.

The initial deposit in the account is 15 000 euros. Compute the deposit after 2 years.

1) 15481.4458 euros

2) 15501.4458 euros

3) 15471.4458 euros

4) 15421.4458 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 20705551589

Exercise 1

Compute $\int_{3a}^{-3} (18\,a - 12\,t + 66\,a\,t - 33\,t^2 + 36\,a\,t^2 - 16\,t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) -91

3) -86

4) -97

5) -100

6) -85

Exercise 2

Compute $\int_{-3}^{3} (-2\,\mathrm{Cos}[t])\,dt$

1) 11.8799

2) -4.77604

3) -4.21642

4) 0.

5) -0.56448

6) -4.20154

Exercise 3

Compute $\int_{-7}^{-3} \left(\frac{9}{t^5}\right)\,dt$

1) 29 230.

2) -2.77019

3) -4.20154

4) -4.21642

5) -4.77604

6) -0.0268407

Exercise 4

Compute $\int_0^1 \left(\frac{-2-8a-2t-4at}{2+3t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) -3.61429

3) -3.51219

4) -2.00629

5) -2.11539

6) -2.64609

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (3+3t)(\sin(2\pi t)+1)$ millions of euros/year.

If the initial deposit in the investment fund was 60 millions of euros, compute the depositis available after 5 years.

1) $\frac{117}{2} + \frac{3}{2\pi}$ millions of euros = 58.9775 millions of euros

2) $\frac{225}{2} - \frac{15}{2\pi}$ millions of euros = 110.1127 millions of euros

3) $72 - \frac{3}{\pi}$ millions of euros = 71.0451 millions of euros

4) $\frac{129}{2} - \frac{3}{2\pi}$ millions of euros = 64.0225 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t)=\cos(2t)$ euros.

Compute the average value of the shares along the first π months of the year (between t=0 and t=π).

1) 70 euros

2) -20 euros

3) 0 euros

4) 80 euros

Exercise 7

Compute the area enclosed by the function $f(x)=-12-14x+2x^3$ and the horizontal axis between the points $x=-5$ and $x=1$.

1) 171

2) $\frac{441}{2} = 220.5$

3) 219

4) 221

5) 216

6) 222

7) 168

8) $\frac{443}{2} = 221.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t)=\frac{1}{10}\cos(5+3t)$ per-unit.

The initial deposit in the account is 8000 euros. Compute the deposit after 2π years.

1) 8090 euros

2) 7950 euros

3) 8000 euros

4) 8030 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 20714551324

Exercise 1

Compute $\int_{3a}^{2} (-6 - 3a + 2t - 54at + 27t^2 + 36at^2 - 16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 4

2) 2

3) The rest of the solutions are not correct

4) 0

5) -18

6) -12

Exercise 2

Compute $\int_{2}^{3} (-2\,\mathrm{Cos}[t])\,dt$

1) -5.15814

2) -5.23793

3) 4.27537

4) 1.53635

5) 2.79047

6) -7.39363

Exercise 3

Compute $\int_{-8}^{-5} \left(\frac{8}{t}\right)\,dt$

1) -3.76003

2) -0.470004

3) -12.8191

4) -12.6239

5) -18.095

6) -12.3667

Exercise 4

Compute $\int_2^4 \left(\frac{2+8a+2t+4at}{2+3t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.9795

2) 1.1626

3) 2.0433

4) 1.0464

5) 2.1669

6) The rest of the solutions are not correct

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (8 + 6t)(\cos(2\pi t) + 2)$ millions of euros/year.

If the initial deposit in the investment fund was 60 millions of euros, compute the depositis available after 5 years.

1) 290 millions of euros

2) 50 millions of euros

3) 116 millions of euros

4) 82 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \cos(-8 + 7t)$ euros.

Compute the average value of the shares along the first 3π months of the year (between $t=0$ and $t=3\pi$).

1) $80 + \frac{2\,\mathrm{Sin}[8]}{21\pi}$ euros = 80.03 euros

2) $60 + \frac{2\,\mathrm{Sin}[8]}{21\pi}$ euros = 60.03 euros

3) $\frac{2\,\mathrm{Sin}[8]}{21\pi}$ euros = 0.03 euros

4) $90 + \frac{2\,\mathrm{Sin}[8]}{21\pi}$ euros = 90.03 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -12 - 14x + 2x^3$ and the horizontal axis between the points $x = -5$ and $x = 0$.

1) 203

2) $\frac{395}{2} = 197.5$

3) $\frac{405}{2} = 202.5$

4) $\frac{407}{2} = 203.5$

5) $\frac{373}{2} = 186.5$

6) 202

7) $\frac{401}{2} = 200.5$

8) $\frac{379}{2} = 189.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\cos(4 + 8t)$ per-unit.

The initial deposit in the account is 8000 euros. Compute the deposit after 4π years.

1) 7970 euros

2) 8000 euros

3) 8050 euros

4) 8007.901 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 20730551515

Exercise 1

Compute $\int_{a}^{1} (-6\,a + 12\,t - 14\,a\,t + 21\,t^2 + 9\,a\,t^2 - 12\,t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −14

2) −13

3) −10

4) −3

5) −1

6) The rest of the solutions are not correct

Exercise 2

Compute $\int_{-1}^{2} (\mathrm{Sin}[3 + t])\,dt$

1) −0.699809

2) −2.95518

3) −3.13767

4) −1.00855

5) −2.83255

6) −0.151178

Exercise 3

Compute $\int_{-6}^{-2} \left(\frac{768}{(-2 + 4\,t)^4}\right)\,dt$

1) −2.95518

2) 0.0603587

3) −3.13767

4) -3.92713×10^{6}

5) −2.2437

6) −2.83255

Exercise 4

Compute $\int_2^4 \left(\frac{3+a-3t+at}{-1+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 0.973412

3) 0.711212

4) 1.07341

5) 1.09861

6) 0.435612

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = 2 + 2t + 3t^3$ millions of euros/year.

If the initial deposit in the investment fund was 40 millions of euros, compute the depositis available after 2 years.

1) 256 millions of euros

2) $\frac{175}{4}$ millions of euros = 43.75 millions of euros

3) 60 millions of euros

4) $\frac{463}{4}$ millions of euros = 115.75 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (-7 + 8t)\sin(6t)$ euros.

Compute the average value of the shares along the first π months of the year (between t=0 and t=π).

1) −4 euros

2) $\frac{4}{3}$ euros = 1.3333 euros

3) $-\frac{8}{3}$ euros = −2.6667 euros

4) $-\frac{4}{3}$ euros = −1.3333 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 1 - x^2$ and the horizontal axis between the points $x=-1$ and $x=5$.

1) $\frac{253}{6} = 42.1667$

2) $\frac{247}{6} = 41.1667$

3) $\frac{128}{3} = 42.6667$

4) $\frac{122}{3} = 40.6667$

5) 36

6) $\frac{116}{3} = 38.6667$

7) $\frac{125}{3} = 41.6667$

8) $\frac{241}{6} = 40.1667$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(8 - 8t)\right)\sin(2t)$ per-unit.

The initial deposit in the account is 5000 euros. Compute the deposit after 4π years.

1) 8256.7551 euros

2) 8295.5208 euros

3) 8265.5208 euros

4) 8205.5208 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 20902651249

Exercise 1

Compute $\int_{-3a}^{5}(-9+9a+6t+36at+18t^2-18at^2-8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −276

2) −283

3) The rest of the solutions are not correct

4) −282

5) −272

6) −296

Exercise 2

Compute $\int_{-2}^{3}((-6+6t)\,\mathrm{Cos}[1+2t])\,dt$

1) 30.5449

2) −16.3524

3) −21.1282

4) 5.28768

5) −25.5676

6) −15.1273

Exercise 3

Compute $\int_{1}^{2}\left(\frac{5}{t^4}\right)dt$

1) 1.45833

2) −5.82712

3) −7.05151

4) −4.17209

5) −4.50998

6) 330.667

Exercise 4

Compute $\int_5^6 \left(\frac{-10+9a-5t-3at}{-6-t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) −1.02389

3) −0.915494

4) −1.34619

5) −1.38049

6) −0.400594

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (2+t)\, e^{3+3t}$ millions of euros/year.

If the initial deposit in the investment fund was 50 millions of euros, compute the depositis available after 2 years.

1) $50 - \frac{5e^3}{9} + \frac{11e^9}{9}$ millions of euros = 9942.6106 millions of euros

2) $50 - \frac{5e^3}{9} + \frac{8e^6}{9}$ millions of euros = 397.4447 millions of euros

3) $\frac{452}{9} - \frac{5e^3}{9}$ millions of euros = 39.0636 millions of euros

4) $50 - \frac{5e^3}{9} + \frac{14e^{12}}{9}$ millions of euros = 253212.9614 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 20\, e^{-1+t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $\frac{1}{8}\left(\frac{20}{e^2} - \frac{20}{e}\right)$ euros = −0.5814 euros

2) $\frac{1}{8}\left(-\frac{20}{e} + 20e^7\right)$ euros = 2740.6632 euros

3) $\frac{1}{8}\left(-\frac{20}{e} + 20e\right)$ euros = 5.876 euros

4) $\frac{1}{8}\left(20 - \frac{20}{e}\right)$ euros = 1.5803 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 12x + 2x^2 - 2x^3$ and the horizontal axis between the points $x = -5$ and $x = 1$.

1) 252

2) $\frac{826}{3} = 275.3333$

3) $\frac{719}{3} = 239.6667$

4) $\frac{820}{3} = 273.3333$

5) 261

6) $\frac{1649}{6} = 274.8333$

7) $\frac{1655}{6} = 275.8333$

8) $\frac{829}{3} = 276.3333$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{13} e^{-6+2t}$ per-unit.

The initial deposit in the account is 12 000 euros. Compute the deposit after 3 years.

1) 12529.3403 euros

2) 12509.3403 euros

3) 12469.3403 euros

4) 12449.3403 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 21104501336

Exercise 1

Compute $\int_{-2a}^{-1} (-2 + 14a + 14t - 28at - 21t^2 + 12at^2 + 8t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) -53

2) The rest of the solutions are not correct

3) -30

4) -36

5) -48

6) -47

Exercise 2

Compute $\int_{0}^{3} (e^{2-3t}(-6-6t))\,dt$

1) -78.5191

2) -98.3279

3) -19.6962

4) -0.0410347

5) 0.0136782

6) -71.4916

Exercise 3

Compute $\int_{3}^{6} (-\frac{384}{(5-4t)^3})\,dt$

1) -63 960.

2) -3.54955

3) -3.62971

4) -4.99222

5) 0.846628

6) -3.9865

Exercise 4

Compute $\int_0^1 \left(\frac{9+8a+3t+4at}{6+5t+t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) 0.735428

2) 1.16173

3) The rest of the solutions are not correct

4) 0.891928

5) 0.878728

6) 1.15073

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (6+8t)(\cos(2\pi t)+2)$ millions of euros/year.

If the initial deposit in the investment fund was 30 millions of euros, compute the depositis available after 4 years.

1) 26 millions of euros

2) 86 millions of euros

3) 206 millions of euros

4) 50 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 2+2t+t^2+t^3+3t^4$ euros.

Compute the average value of the shares along the first 6 months of the year (between t=0 and t=6).

1) $\frac{4258}{5}$ euros = 851.6 euros

2) $\frac{254}{45}$ euros = 5.6444 euros

3) $\frac{251}{360}$ euros = 0.6972 euros

4) $\frac{1267}{40}$ euros = 31.675 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 18 + 15x + 3x^2$ and the horizontal axis between the points $x=2$ and $x=5$.

1) $\frac{665}{2} = 332.5$

2) $\frac{667}{2} = 333.5$

3) 330

4) 332

5) $\frac{661}{2} = 330.5$

6) $\frac{657}{2} = 328.5$

7) $\frac{663}{2} = 331.5$

8) 331

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{100}$ per-unit.

The initial deposit in the account is 20 000 euros. Compute the deposit after 2 years.

1) 20454.0268 euros

2) 20404.0268 euros

3) 20424.0268 euros

4) 20414.0268 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 21130550766

Exercise 1

Compute $\int_{3a}^{2} (2 - 33a + 22t + 18at - 9t^2 + 36at^2 - 16t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 55

2) 62

3) The rest of the solutions are not correct

4) 48

5) 44

6) 60

Exercise 2

Compute $\int_{1}^{2} (-2t\,\text{Cos}[2 - t])\,dt$

1) -11.9125

2) -11.4644

3) -11.639

4) -2.60234

5) -11.4894

6) -0.841471

Exercise 3

Compute $\int_{-2}^{-1} \left(-\frac{3}{(1 - t)^3}\right)dt$

1) -4.40543

2) -4.47253

3) -4.57761

4) -4.41505

5) 32.5

6) -0.208333

Exercise 4

Compute $\int_2^4 \left(\frac{-2 + 6 a - 2 t + 3 a t}{2 + 3 t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.23928

2) 1.41938

3) 1.53248

4) 1.43278

5) The rest of the solutions are not correct

6) 0.978477

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (6 + 6 t) e^{-2+2 t}$ millions of euros/year.

If the initial deposit in the investment fund was 60 millions of euros, compute the depositis available after 2 years.

1) $\frac{129}{2} - \frac{3}{2 e^2}$ millions of euros = 64.297 millions of euros

2) $60 - \frac{3}{2 e^4} - \frac{3}{2 e^2}$ millions of euros = 59.7695 millions of euros

3) $60 - \frac{3}{2 e^2} + \frac{15 e^2}{2}$ millions of euros = 115.2149 millions of euros

4) $60 - \frac{3}{2 e^2} + \frac{21 e^4}{2}$ millions of euros = 633.0776 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = \cos(-2 + 3 t)$ euros.

Compute the average value of the shares along the first π months of the year (between t=0 and t=π).

1) $40 + \frac{2 \text{Sin}[2]}{3 \pi}$ euros = 40.193 euros

2) $30 + \frac{2 \text{Sin}[2]}{3 \pi}$ euros = 30.193 euros

3) $90 + \frac{2 \text{Sin}[2]}{3 \pi}$ euros = 90.193 euros

4) $\frac{2 \text{Sin}[2]}{3 \pi}$ euros = 0.193 euros

Exercise 7

Compute the area enclosed by the function $f(x) = -4 - 2x + 4x^2 + 2x^3$ and the horizontal axis between the points $x=-3$ and $x=4$.

1) $\frac{1043}{6} = 173.8333$

2) $\frac{598}{3} = 199.3333$

3) $\frac{1199}{6} = 199.8333$

4) $\frac{1181}{6} = 196.8333$

5) $\frac{595}{3} = 198.3333$

6) $\frac{1117}{6} = 186.1667$

7) $\frac{1193}{6} = 198.8333$

8) $\frac{369}{2} = 184.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{10}\cos(-2 + 5t)$ per-unit.

The initial deposit in the account is 7000 euros. Compute the deposit after 4π years.

1) 7030 euros

2) 7040 euros

3) 7090 euros

4) 7000 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 30216550613

Exercise 1

Compute $\int_{2a}^{-5} (3 - 14a + 14t + 4at - 3t^2 + 6at^2 - 4t^3)\, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −149

2) −151

3) −156

4) The rest of the solutions are not correct

5) −136

6) −134

Exercise 2

Compute $\int_{3}^{6} ((3 - t)\, \mathrm{Log}[t])\, dt$

1) −1.33127

2) −24.1344

3) −7.19376

4) −4.94376

5) −25.1432

6) −32.8728

Exercise 3

Compute $\int_{-2}^{0} \left(\frac{729}{(3 - 3t)^4}\right) dt$

1) 19 602.

2) −6.04435

3) 2.88889

4) −13.2011

5) −9.69195

6) −10.0971

Exercise 4

Compute $\int_{4}^{6} \left(\frac{2 + 3 a - t + 3 a t}{-2 - t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a.
Compute the derivative of such a formula at the point 0.

1) The rest of the solutions are not correct

2) 2.76844

3) 2.97264

4) 1.64904

5) 2.07944

6) 1.86754

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (8 + 5 t) e^{1+t}$ millions of euros/year.

If the initial deposit in the investment fund was 70 millions of euros, compute the depositis available after 1 year.

1) $70 - 3 e + 13 e^3$ millions of euros = 322.9571 millions of euros

2) $68 - 3 e$ millions of euros = 59.8452 millions of euros

3) $70 - 3 e + 18 e^4$ millions of euros = 1044.6119 millions of euros

4) $70 - 3 e + 8 e^2$ millions of euros = 120.9576 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (4 + 3 t)(\sin(2\pi t) + 1)$ euros.

Compute the average value of the shares along the first 6 months of the year (between t=0 and t=6).

1) $\frac{1}{6}\left(-\frac{5}{2} + \frac{3}{2 \pi}\right)$ euros = -0.3371 euros

2) $\frac{1}{6}\left(14 - \frac{3}{\pi}\right)$ euros = 2.1742 euros

3) $\frac{1}{6}\left(\frac{11}{2} - \frac{3}{2 \pi}\right)$ euros = 0.8371 euros

4) $\frac{1}{6}\left(78 - \frac{9}{\pi}\right)$ euros = 12.5225 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 6 + 3x - 3x^2$ and the horizontal axis between the points $x=-1$ and $x=4$.

1) $\frac{79}{2} = 39.5$

2) $\frac{91}{2} = 45.5$

3) $\frac{89}{2} = 44.5$

4) $\frac{25}{2} = 12.5$

5) $\frac{85}{2} = 42.5$

6) $\frac{83}{2} = 41.5$

7) 42

8) $\frac{87}{2} = 43.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \left(\frac{1}{100}(4 + 3t)\right)(\sin(2\pi t) + 1)$ per-unit.

The initial deposit in the account is 5000 euros. Compute the deposit after 5 years.

1) 8746.0354 euros

2) 8756.0354 euros

3) 8676.0354 euros

4) 8716.0354 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 30312650522

Exercise 1

Compute $\int_{3a}^{0} (-3 + 24 a - 16 t + 6 a t - 3 t^2 - 36 a t^2 + 16 t^3) \, dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 25

2) -10

3) The rest of the solutions are not correct

4) 14

5) 1

6) 9

Exercise 2

Compute $\int_{-2}^{2} ((-3 + 3 t) \, \mathrm{Sin}[2 + t]) \, dt$

1) 12.

2) -38.0145

3) -34.1604

4) -27.4375

5) 0.

6) -9.30948

Exercise 3

Compute $\int_{3}^{4} \left(\frac{20}{-3 + 4 t}\right) dt$

1) 0.367725

2) -6.74669

3) -7.50787

4) -5.41892

5) -5.09906

6) 1.83862

Exercise 4

Compute $\int_4^5 \left(\frac{-3-15\,a+3\,t+5\,a\,t}{3-4\,t+t^2}\right)dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) 1.43841

2) 0.48241

3) 2.07681

4) The rest of the solutions are not correct

5) 1.49041

6) 1.12431

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (1+t+3\,t^2)\log(3\,t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 70 millions euros, compute the deposit available after (with respect to t=1) 4 years.

1) $\frac{169}{4} - \frac{5\,\text{Log}[3]}{2} + 76\,\text{Log}[12]$ millions of euros = 228.3564 millions of euros

2) $\frac{236}{3} - \frac{5\,\text{Log}[3]}{2} + \frac{285\,\text{Log}[15]}{2}$ millions of euros = 461.8173 millions of euros

3) $-\frac{185}{12} - \frac{5\,\text{Log}[3]}{2} + 240\,\text{Log}[18]$ millions of euros = 675.526 millions of euros

4) $\frac{56}{3} - \frac{5\,\text{Log}[3]}{2} + \frac{285\,\text{Log}[15]}{2}$ millions of euros = 401.8173 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = (-3-4\,t)\cos(3\,t)$ euros.

Compute the average value of the shares along the first $3\,\pi$ months of the year (between t=0 and t=$3\,\pi$).

1) $\frac{8}{27\,\pi}$ euros = 0.0943 euros

2) 0 euros

3) $20 + \frac{8}{27\,\pi}$ euros = 20.0943 euros

4) $50 + \frac{8}{27\,\pi}$ euros = 50.0943 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 6 - 5x - 2x^2 + x^3$ and the horizontal axis between the points x=0 and x=5.

1) $\frac{643}{12} = 53.5833$

2) $\frac{485}{12} = 40.4167$

3) $\frac{613}{12} = 51.0833$

4) $\frac{637}{12} = 53.0833$

5) $\frac{137}{4} = 34.25$

6) $\frac{631}{12} = 52.5833$

7) $\frac{649}{12} = 54.0833$

8) $\frac{655}{12} = 54.5833$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = (\frac{1}{100}(3 - 2t))\cos(6t)$ per-unit.

The initial deposit in the account is 20 000 euros. Compute the deposit after 4π years.

1) 19 990 euros

2) 20 050 euros

3) 19 970 euros

4) 20 000 euros

Mathematics 1 - ADE/FyCo - 2020/2021
List of exercises 03-Integration for identity number: 30509500045

Exercise 1

Compute $\int_{3a}^{-5}(1-9a+6t+6at-3t^2+27at^2-12t^3)\,dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −1014

2) The rest of the solutions are not correct

3) −1008

4) −998

5) −996

6) −1003

Exercise 2

Compute $\int_{-3}^{2}(-2\,\mathrm{Cos}[1-2t])\,dt$

1) −4.62338

2) 1.68872

3) −4.93629

4) −0.798107

5) −0.563444

6) −4.14798

Exercise 3

Compute $\int_{4}^{8}\left(\frac{3}{(1-t)^4}\right)dt$

1) −4.93629

2) −3.49029

3) −4.62338

4) 5521.33

5) 0.0341216

6) −4.14798

Exercise 4

Compute $\int_{-1}^{0} \left(\frac{-10 - 15 a - 5 t - 5 a t}{6 + 5 t + t^2}\right) dt$

. The resulting expression is a formula in terms of parameter a. Compute the derivative of such a formula at the point 0.

1) −3.28854

2) −3.92794

3) −3.46574

4) The rest of the solutions are not correct

5) −3.72094

6) −4.22244

Exercise 5

The deposits of an investment fund vary from one year to another being the speed of that variation determined by the function

$v(t) = (4 + t + 3 t^2) \log(5 t)$ millions of euros/year.

If, for t=1, the deposits in the investment fund were 60 millions euros, compute the deposit available after (with respect to t=1) 5 years.

1) $-\frac{10}{3} - \frac{11 \text{Log}[5]}{2} + \frac{315 \text{Log}[25]}{2}$ millions of euros = 494.7877 millions of euros

2) $\frac{235}{12} - \frac{11 \text{Log}[5]}{2} + 258 \text{Log}[30]$ millions of euros = 888.2403 millions of euros

3) $-\frac{485}{12} - \frac{11 \text{Log}[5]}{2} + 258 \text{Log}[30]$ millions of euros = 828.2403 millions of euros

4) $\frac{93}{4} - \frac{11 \text{Log}[5]}{2} + 88 \text{Log}[20]$ millions of euros = 278.0225 millions of euros

Exercise 6

The true value of certain shares oscillates along the year. The following function yields the value of the shares for each month t:

$V(t) = 30 e^{2+t}$ euros.

Compute the average value of the shares along the first 8 months of the year (between t=0 and t=8).

1) $\frac{1}{8}\left(30 e - 30 e^2\right)$ euros = −17.5154 euros

2) $\frac{1}{8}\left(-30 e^2 + 30 e^3\right)$ euros = 47.6118 euros

3) $\frac{1}{8}\left(-30 e^2 + 30 e^{10}\right)$ euros = 82571.5378 euros

4) $\frac{1}{8}\left(-30 e^2 + 30 e^4\right)$ euros = 177.0341 euros

Exercise 7

Compute the area enclosed by the function $f(x) = 24 + 8x - 6x^2 - 2x^3$ and the horizontal axis between the points $x=0$ and $x=3$.

1) 69

2) 68

3) $\frac{141}{2} = 70.5$

4) $\frac{133}{2} = 66.5$

5) $\frac{139}{2} = 69.5$

6) 70

7) $\frac{137}{2} = 68.5$

8) $\frac{27}{2} = 13.5$

Exercise 8

Certain bank account offers a variable continuous compound interes rate. The interest rate for each year is given by the function

$I(t) = \frac{1}{15} e^{-6+2t}$ per-unit.

The initial deposit in the account is 5000 euros. Compute the deposit after 3 years.

1) 5149.0485 euros

2) 5249.0485 euros

3) 5190.2828 euros

4) 5169.0485 euros