Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 1

Exercise 1

Compute $\int_D (2x + 2y)\,dx\,dy$ for $D = \{9 \le x^{13} y^2 \le 13,\ 1 \le x^{32} y^5 \le 8,\ x > 0,\ y > 0\}$

1) -0.1

2) 1.37628×10^{-15}

3) 0.6

4) -0.8

5) -0.1

Exercise 2

Compute the volume of the domain limited by the plane $6x + 2z == 1$ and the paraboloid $z == 7x^2 + 7y^2$.

1) 0.151412

2) 0.342025

3) 0.414668

4) 0.102453

5) 0.291287

Exercise 3

Compute $\int_D (2x + y^3)\,dx\,dy\,dz$ for $D =$
$\{2x^4 y^6 \le z \le 8x^4 y^6,\ x^3 y^8 z^9 \le 1 \le 9x^3 y^8 z^9,\ 4x^8 y^4 \le z^8 \le 13x^8 y^4,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.23286

2) 1.03286

3) 0.0328641

4) 0.132864

5) -1.16714

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 2

Exercise 1

Compute $\int_D (x\,y)\,dx\,dy$ for $D=\left\{9 \le x^4\,y^{11} \le 11,\ 4\,x^3\,y^8 \le 1 \le 6\,x^3\,y^8,\ x>0,\ y>0\right\}$

1) -1.4

2) 0.6

3) -0.5

4) -1.4

5) 6.58292×10^{-21}

Exercise 2

Compute the volume of the domain limited by the plane
$3\,x+4\,z=9$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 2.05065

2) 2.47556

3) 1.39044

4) 9.8511

5) 9.10638

Exercise 3

Compute $\int_D (y^3\,z^3)\,dx\,dy\,dz$ for $D=$
$\left\{6\,x^4 \le y^8\,z^6 \le 14\,x^4,\ 3\,x^3\,z^8 \le y^2 \le 5\,x^3\,z^8,\ 6\,x^9 \le z^8 \le 10\,x^9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.100377

2) -1.09962

3) -0.199623

4) 0.000376868

5) -1.59962

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 3

Exercise 1

Compute $\int_D (x^6)\,dx\,dy$ for $D=\left\{8\,y \le x^3 \le 15\,y,\ 6\,x^5 \le y^2 \le 8\,x^5,\ x>0,\ y>0\right\}$

1) 3.42849×10^{29}

2) 8.27567×10^{28}

3) 1.18224×10^{29}

4) 7.09343×10^{28}

5) -5.91119×10^{28}

Exercise 2

Compute the volume of the domain limited by the plane $6\,x+3\,z=2$ and the paraboloid $z=8\,x^2+8\,y^2$.

1) 0.10421

2) 0.107676

3) 0.101706

4) 0.187726

5) 0.123059

Exercise 3

Compute $\int_D (3\,x\,y)\,dx\,dy\,dz$ for $D=\left\{2 \le x^4\,y^6\,z^9 \le 5,\ 7\,x^6 \le y^5\,z^2 \le 14\,x^6,\ 1 \le x^6\,y^4\,z^4 \le 4,\ x>0,\ y>0,\ z>0\right\}$

1) 0.0208653

2) -1.37913

3) -1.27913

4) 1.92087

5) 1.92087

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 4

Exercise 1

Compute $\int_D (y^2)\,dx\,dy$ for $D=\{3 \le x\,y \le 8,\ 7\,x^2\,y \le 1 \le 16\,x^2\,y,\ x>0,\ y>0\}$

1) 1.54852×10^6

2) 1.54852×10^6

3) $673\,267.$

4) 1.14455×10^6

5) $67\,326.8$

Exercise 2

Compute the volume of the domain limited by the plane $9\,x+5\,z==3$ and the paraboloid $z==2\,x^2+2\,y^2$.

1) 3.01953

2) 3.29355

3) 0.793272

4) 0.297145

5) 1.85454

Exercise 3

Compute $\int_D (x^3\,z)\,dx\,dy\,dz$ for $D=$
$\{5 \le x^8\,y^9\,z^2 \le 10,\ 7\,x \le y\,z^9 \le 11\,x,\ 7\,x^3 \le y^8\,z^6 \le 11\,x^3,\ x>0,\ y>0,\ z>0\}$

1) -1.39956

2) -0.499562

3) -0.699562

4) 0.000438472

5) -1.59956

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 5

Exercise 1

Compute $\int_D (3\,y^2)\,dx\,dy$ for $D=\left\{3\,y^2 \le x^3 \le 7\,y^2,\ 2\,x^4 \le y^3 \le 3\,x^4,\ x>0,\ y>0\right\}$

1) 2.4183×10^{16}

2) -4.53431×10^{15}

3) 1.51144×10^{16}

4) 2.87173×10^{16}

5) 3.02288×10^{16}

Exercise 2

Compute the volume of the domain limited by the plane
$2\,x+3\,z=9$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 9.02894

2) 0.63656

3) 3.60004

4) 14.146

5) 10.9523

Exercise 3

Compute $\int_D (2\,y\,z)\,dx\,dy\,dz$ for $D=$
$\left\{6\,x^7 \le y\,z^5 \le 11\,x^7,\ 7\,z^5 \le x^5\,y^6 \le 11\,z^5,\ 5 \le x^3\,y^5\,z^4 \le 14,\ x>0,\ y>0,\ z>0\right\}$

1) -1.99594

2) -1.19594

3) -1.79594

4) -0.595937

5) 0.00406258

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 6

Exercise 1

Compute $\int_D (3\,x\,y)\,dx\,dy$ for $D=\left\{5\,y^{12}\le x^5\le 6\,y^{12},\ 7\,x^2\le y^5\le 16\,x^2,\ x>0,\ y>0\right\}$

1) 6.34769×10^{49}

2) 1.11085×10^{50}

3) 3.9673×10^{49}

4) -2.38038×10^{49}

5) 7.53788×10^{49}

Exercise 2

Compute the volume of the domain limited by the plane
$10\,x+2\,z=9$ and the paraboloid $z=2\,x^2+2\,y^2$.

1) 168.548

2) 23.1162

3) 45.6635

4) 209.771

5) 11.5779

Exercise 3

Compute $\int_D (x^2+z)\,dx\,dy\,dz$ for $D=$
$\left\{8\le x^3\,y^3\,z^3\le 9,\ 3\,x^2\,y^5\,z^9\le 1\le 10\,x^2\,y^5\,z^9,\ 8\,x^5\,z^8\le y^2\le 12\,x^5\,z^8,\ x>0,\ y>0,\ z>0\right\}$

1) -1.69595

2) 0.60405

3) 0.00405005

4) -1.59595

5) 1.30405

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 7

Exercise 1

Compute $\int_D (x^2 + 2y)\,dx\,dy$ for $D = \{2 \le x^2 y \le 8,\ 2 \le x y \le 10,\ x > 0,\ y > 0\}$

1) 104.

2) −104.

3) 52.

4) 260.

5) 312.

Exercise 2

Compute the volume of the domain limited by the plane $4x + 5z = 5$ and the paraboloid $z = 3x^2 + 3y^2$.

1) 0.580939

2) 2.37393

3) 0.510206

4) 0.48562

5) 1.5754

Exercise 3

Compute $\int_D (3x^4)\,dx\,dy\,dz$ for $D = \{x^3 z^8 \le y^8 \le 5x^3 z^8,\ 6z \le x^6 y^7 \le 10z,\ 6 \le x^2 y^9 z^8 \le 7,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.698937

2) −0.398937

3) 0.0010628

4) 1.30106

5) 1.30106

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 8

Exercise 1

Compute $\int_D (x + y^2)\,dx\,dy$ for $D = \{3x^5 \le y^{12} \le 9x^5,\ 2y^5 \le x^2 \le 9y^5,\ x > 0,\ y > 0\}$

1) 1.5

2) 1.4

3) −0.7

4) 1.51683×10^{-16}

5) −1.8

Exercise 2

Compute the volume of the domain limited by the plane
$4x + 9z = 1$ and the paraboloid $z = 8x^2 + 8y^2$.

1) 0.0621859

2) 0.00270089

3) 0.011944

4) 0.00537437

5) 0.0556749

Exercise 3

Compute $\int_D (xz)\,dx\,dy\,dz$ for $D =$
$\{9x^2y^9z^2 \le 1 \le 11x^2y^9z^2,\ 3 \le x^3y^3z^9 \le 11,\ 3x^6 \le y^2z^2 \le 7x^6,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.299574

2) 0.300426

3) 1.50043

4) 0.000426222

5) −0.0995738

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 9

Exercise 1

Compute $\int_D (x^2 + y^2)\,dx\,dy$ for $D = \{6 \le x^3 y \le 11,\ 7 \le x^{11} y^4 \le 11,\ x > 0,\ y > 0\}$

1) 2.71191

2) 3.1639

3) 2.25993

4) 1.35596

5) −1.80794

Exercise 2

Compute the volume of the domain limited by the plane $5x + 6z = 6$ and the paraboloid $z = 8x^2 + 8y^2$.

1) 0.204964

2) 0.125599

3) 0.829075

4) 0.172969

5) 0.972088

Exercise 3

Compute $\int_D (z^2)\,dx\,dy\,dz$ for $D = \{3x \le y \le 9x,\ 5 \le x y^7 z^5 \le 10,\ 9x y^4 z^4 \le 1 \le 17 x y^4 z^4,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.30007

2) −0.39993

3) 0.0000697263

4) 0.20007

5) 0.10007

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 10

Exercise 1

Compute $\int_D (2\,y^3)\,dx\,dy$ for $D=\left\{6\,x^{41}\,y^{12} \le 1 \le 11\,x^{41}\,y^{12},\ 8\,x^{17}\,y^5 \le 1 \le 15\,x^{17}\,y^5,\ x>0,\ y>0\right\}$

1) -0.1

2) 4.54891×10^{-76}

3) -1.5

4) -0.3

5) 1.4

Exercise 2

Compute the volume of the domain limited by the plane
$5\,x+4\,z=2$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 0.0995199

2) 0.0973245

3) 0.0693209

4) 0.224328

5) 0.0955689

Exercise 3

Compute $\int_D (x+z^3)\,dx\,dy\,dz$ for $D=$
$\left\{3\,z^6 \le x^9\,y^9 \le 8\,z^6,\ 4\,x^7\,y^2 \le z \le 7\,x^7\,y^2,\ 4\,y^6 \le x\,z^5 \le 8\,y^6,\ x>0,\ y>0,\ z>0\right\}$

1) 8.08343×10^{21}

2) 1.50891×10^{22}

3) 1.5628×10^{22}

4) 5.38896×10^{21}

5) 1.40113×10^{22}

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 11

Exercise 1

Compute $\int_D (3\,y^3)\,dx\,dy$ for $D=\left\{6\,x^{12}\,y^{19}\le 1\le 12\,x^{12}\,y^{19},\ 4\le x^7\,y^{11}\le 11,\ x>0,\ y>0\right\}$

1) -1.2

2) 1.24727×10^{-33}

3) $1.$

4) -1.6

5) $2.$

Exercise 2

Compute the volume of the domain limited by the plane
$7\,x+6\,z=8$ and the paraboloid $z=6\,x^2+6\,y^2$.

1) 0.316248

2) 1.37635

3) 2.47564

4) 0.135288

5) 0.505856

Exercise 3

Compute $\int_D (4\,x)\,dx\,dy\,dz$ for $D=\left\{2\le x^3\,y^8\,z^9\le 9,\ 2\le x^3\,y\,z^4\le 7,\ 7\,x^4\,z^9\le y^5\le 10\,x^4\,z^9,\ x>0,\ y>0,\ z>0\right\}$

1) -0.300729

2) -0.200729

3) 0.099271

4) -0.800729

5) 1.69927

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 12

Exercise 1

Compute $\int_D (x^3 + y)\,dx\,dy$ for $D = \{6\,x^8\,y^{13} \le 1 \le 14\,x^8\,y^{13},\ 6\,x^{11}\,y^{18} \le 1 \le 11\,x^{11}\,y^{18},\ x > 0,\ y > 0\}$

1) −11.9969

2) 13.1966

3) 11.9969

4) 20.3948

5) 34.7911

Exercise 2

Compute the volume of the domain limited by the plane $8\,x + 2\,z == 10$ and the paraboloid $z == 9\,x^2 + 9\,y^2$.

1) 23.7927

2) 2.46576

3) 5.1735

4) 2.60356

5) 25.119

Exercise 3

Compute $\int_D (9\,x\,y)\,dx\,dy\,dz$ for $D =$
$\{1 \le x^6\,y^3\,z^8 \le 2,\ 9\,z^3 \le x^9\,y^6 \le 18\,z^3,\ 7\,z^9 \le x\,y^9 \le 12\,z^9,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.0946835

2) 0.00531651

3) −0.494683

4) −0.194683

5) 1.00532

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 13

Exercise 1

Compute $\int_D (x^2 + 3y)\,dx\,dy$ for $D = \{7x^2 y \le 1 \le 11x^2 y,\ 8 \le x^9 y^4 \le 14,\ x > 0,\ y > 0\}$

1) 3556.8

2) 1778.4

3) 3556.8

4) 592.8

5) 1976.

Exercise 2

Compute the volume of the domain limited by the plane
$8x + 9z = 2$ and the paraboloid $z = 3x^2 + 3y^2$.

1) 0.0987269

2) 0.132782

3) 0.101679

4) 0.0434492

5) 0.0747571

Exercise 3

Compute $\int_D (2y^2)\,dx\,dy\,dz$ for $D =$
$\{4z^5 \le x^3 y^7 \le 12z^5,\ x^6 z^8 \le y^5 \le 8x^6 z^8,\ 9y^8 \le xz \le 13y^8,\ x > 0,\ y > 0,\ z > 0\}$

1) -1.29877

2) 0.50123

3) 2.00123

4) 0.00123003

5) 1.90123

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 14

Exercise 1

Compute $\int_D (4\,y)\,dx\,dy$ for $D=\left\{1 \le x\,y^3 \le 4,\ 9 \le x^3\,y^{10} \le 14,\ x>0,\ y>0\right\}$

1) 10.119

2) 26.3095

3) 21.25

4) 4.04762

5) 6.07143

Exercise 2

Compute the volume of the domain limited by the plane $6\,x+10\,z==5$ and the paraboloid $z==7\,x^2+7\,y^2$.

1) 0.182239

2) 0.0558318

3) 0.0881407

4) 0.155938

5) 0.0590221

Exercise 3

Compute $\int_D (x+3\,z)\,dx\,dy\,dz$ for $D=$
$\left\{8 \le x^2\,y\,z^6 \le 17,\ 4\,x^9\,z^4 \le y^3 \le 12\,x^9\,z^4,\ 6\,y^7 \le x\,z \le 7\,y^7,\ x>0,\ y>0,\ z>0\right\}$

1) -0.997904

2) 0.00209596

3) 0.502096

4) 1.9021

5) -0.297904

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 15

Exercise 1

Compute $\int_D (x^4)\,dx\,dy$ for $D=\left\{x^5 y^6 \le 1 \le 9\,x^5 y^6,\ 1 \le x\,y \le 7,\ x>0,\ y>0\right\}$

1) -5.27845×10^{22}

2) -2.63922×10^{22}

3) -1.75948×10^{22}

4) 1.49556×10^{23}

5) 8.79741×10^{22}

Exercise 2

Compute the volume of the domain limited by the plane
$8\,x+6\,z=2$ and the paraboloid $z=6\,x^2+6\,y^2$.

1) 0.202063

2) 0.0434537

3) 0.0611

4) 0.190145

5) 0.0915258

Exercise 3

Compute $\int_D (x^3\,y)\,dx\,dy\,dz$ for $D=$
$\left\{4\,z^2 \le x^5\,y \le 10\,z^2,\ 3\,x^7\,z^9 \le y^6 \le 5\,x^7\,z^9,\ 9\,x^9 \le y^8\,z^4 \le 18\,x^9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.20565

2) 1.30565

3) -1.99435

4) 0.10565

5) 0.00565028

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 16

Exercise 1

Compute $\int_D (x\,y^2)\,dx\,dy$ for $D = \{x^{11}\,y^{18} \le 1 \le 8\,x^{11}\,y^{18},\ 3\,x^3\,y^5 \le 1 \le 5\,x^3\,y^5,\ x > 0,\ y > 0\}$

1) 40.0167

2) 8.575

3) −14.2917

4) −2.85833

5) 28.5833

Exercise 2

Compute the volume of the domain limited by the plane $8\,x + z == 9$ and the paraboloid $z == 7\,x^2 + 7\,y^2$.

1) 22.2202

2) 105.453

3) 28.5812

4) 124.807

5) 78.2844

Exercise 3

Compute $\int_D (2\,y^3)\,dx\,dy\,dz$ for $D =$
$\{6\,y^7\,z^3 \le x^5 \le 10\,y^7\,z^3,\ 8\,x^9 \le y\,z^3 \le 17\,x^9,\ 4\,x \le z^7 \le 6\,x,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.0999232

2) 1.90008

3) 0.0000768338

4) −1.69992

5) 0.500077

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 17

Exercise 1

Compute $\int_D (3\,y)\,dx\,dy$ for $D=\{8 \le x\,y^3 \le 13,\ 6 \le x^2\,y^7 \le 11,\ x>0,\ y>0\}$

1) 38.2955

2) 127.652

3) −76.5909

4) 229.773

5) 344.659

Exercise 2

Compute the volume of the domain limited by the plane $x+8\,z=6$ and the paraboloid $z=8\,x^2+8\,y^2$.

1) 0.441444

2) 0.11059

3) 0.0995346

4) 0.271884

5) 0.528316

Exercise 3

Compute $\int_D (6\,x^2)\,dx\,dy\,dz$ for $D=$
$\{9\,x^6\,y^2\,z^7 \le 1 \le 13\,x^6\,y^2\,z^7,\ 8\,x^3\,y^2 \le z^7 \le 17\,x^3\,y^2,\ 6\,y^5 \le x^6\,z^4 \le 14\,y^5,\ x>0,\ y>0,\ z>0\}$

1) −1.59919

2) 0.000813636

3) −1.79919

4) 1.30081

5) 1.60081

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 18

Exercise 1

Compute $\int_D (3\,y^4)\,dx\,dy$ for $D=\{y^2 \le x \le 7\,y^2,\ y \le x \le 9\,y,\ x>0,\ y>0\}$

1) $-341\,638.$

2) $273\,310.$

3) $888\,258.$

4) $341\,638.$

5) $-34\,163.8$

Exercise 2

Compute the volume of the domain limited by the plane
$10\,x+10\,z==8$ and the paraboloid $z==9\,x^2+9\,y^2$.

1) 0.582318

2) 0.10365

3) 0.10035

4) 0.119593

5) 0.528344

Exercise 3

Compute $\int_D (x^2+z)\,dx\,dy\,dz$ for $D=$
$\{4\,y^9 \le x^3\,z^7 \le 12\,y^9,\ 5\,x^2\,y^8 \le z^6 \le 7\,x^2\,y^8,\ 7\,z^5 \le x\,y^5 \le 15\,z^5,\ x>0,\ y>0,\ z>0\}$

1) 0.900053

2) 0.0000525862

3) 1.90005

4) −0.499947

5) −1.59995

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 19

Exercise 1

Compute $\int_D (3y + y^3)\,dx\,dy$ for $D = \{3x^5 y^{11} \le 1 \le 8x^5 y^{11},\ 9 \le x^{11} y^{24} \le 17,\ x > 0,\ y > 0\}$

1) 990.

2) 990.

3) −330.

4) 660.

5) −264.

Exercise 2

Compute the volume of the domain limited by the plane $2x + z = 8$ and the paraboloid $z = 2x^2 + 2y^2$.

1) 9.88415

2) 56.745

3) 9.87593

4) 248.951

5) 164.105

Exercise 3

Compute $\int_D (y^3 z)\,dx\,dy\,dz$ for $D =$

$\{7x^2 y^9 z^2 \le 1 \le 10x^2 y^9 z^2,\ 2x^7 z \le y^3 \le 10x^7 z,\ 9z \le x^7 y^9 \le 16z,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.90009

2) −1.79991

3) 0.200089

4) 0.0000890515

5) −0.499911

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 20

Exercise 1

Compute $\int_D (2\,y)\,dx\,dy$ for $D=\left\{3\,y^2 \le x \le 12\,y^2,\ 9\,x^8 \le y^{17} \le 12\,x^8,\ x>0,\ y>0\right\}$

1) 1.23336×10^{38}

2) 1.58574×10^{38}

3) 2.46671×10^{38}

4) 8.80968×10^{37}

5) 6.16678×10^{37}

Exercise 2

Compute the volume of the domain limited by the plane
$2\,x+2\,z=1$ and the paraboloid $z=x^2+y^2$.

1) 3.62273

2) 0.883573

3) 0.192554

4) 1.08993

5) 1.01612

Exercise 3

Compute $\int_D (3\,x)\,dx\,dy\,dz$ for $D=$
$\left\{5\,x^7\,y^3\,z^9 \le 1 \le 10\,x^7\,y^3\,z^9,\ 5\,x^5\,y \le z \le 8\,x^5\,y,\ 6\,y\,z^5 \le x^3 \le 11\,y\,z^5,\ x>0,\ y>0,\ z>0\right\}$

1) -0.698474

2) 1.90153

3) 1.50153

4) 0.00152573

5) -1.99847

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 21

Exercise 1

Compute $\int_D (2\,x^3\,y)\,dx\,dy$ for $D=\left\{5\,y^{32}\le x^{13}\le 12\,y^{32},\ 8\,x^2\le y^5\le 14\,x^2,\ x>0,\ y>0\right\}$

1) 3.43009×10^{199}

2) $0.$

3) 4.11611×10^{198}

4) 1.37204×10^{199}

5) 6.86018×10^{198}

Exercise 2

Compute the volume of the domain limited by the plane $8\,x+z=4$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 84.8611

2) 25.1327

3) 15.4643

4) 57.505

5) 63.9657

Exercise 3

Compute $\int_D (6\,z^2)\,dx\,dy\,dz$ for $D=$
$\left\{5\,y^9\le x^5\,z^7\le 7\,y^9,\ 4\,x^7\,y^9\le z^9\le 13\,x^7\,y^9,\ 4\le x\,y^8\,z^5\le 11,\ x>0,\ y>0,\ z>0\right\}$

1) 0.904834

2) -0.995166

3) -1.99517

4) -1.69517

5) 0.0048338

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 22

Exercise 1

Compute $\int_D (x + x^2)\, dx dy$ for $D = \{4 x y \leq 1 \leq 10 x y,\ 2 \leq x^2 y \leq 8,\ x > 0,\ y > 0\}$

1) -129.848

2) 537.943

3) 241.147

4) -55.6493

5) 185.498

Exercise 2

Compute the volume of the domain limited by the plane
$8 x + 2 z == 10$ and the paraboloid $z == 6 x^2 + 6 y^2$.

1) 2.59194

2) 34.9107

3) 2.0771

4) 8.40667

5) 30.3785

Exercise 3

Compute $\int_D (y + z^3)\, dx dy dz$ for $D = \{3 \leq x^6 y^6 \leq 7,\ 6 \leq x y^2 z^9 \leq 8,\ 6 x^9 z^3 \leq y^7 \leq 13 x^9 z^3,\ x > 0,\ y > 0,\ z > 0\}$

1) -0.999055

2) -1.59906

3) -0.899055

4) 0.200945

5) 0.000944711

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 23

Exercise 1

Compute $\int_D (x^2 + 3y)\,dx\,dy$ for $D = \left\{3x^5y^{21} \le 1 \le 4x^5y^{21},\ 5 \le xy^4 \le 6,\ x > 0,\ y > 0\right\}$

1) -8.5479×10^{47}

2) 1.79506×10^{49}

3) 8.5479×10^{48}

4) 1.79506×10^{49}

5) 5.98353×10^{48}

Exercise 2

Compute the volume of the domain limited by the plane $4x + 5z == 1$ and the paraboloid $z == x^2 + y^2$.

1) 0.124409

2) 0.113423

3) 0.127218

4) 0.203575

5) 0.524166

Exercise 3

Compute $\int_D (x^3 + 3z)\,dx\,dy\,dz$ for $D =$
$\left\{9y^9z^9 \le x^4 \le 11y^9z^9,\ 5 \le y^3z^2 \le 11,\ 7x^2z^8 \le y^6 \le 10x^2z^8,\ x > 0,\ y > 0,\ z > 0\right\}$

1) 0.849283

2) 4.24641

3) 3.82177

4) 4.88338

5) 2.12321

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 24

Exercise 1

Compute $\int_D (4\,x\,y)\,dx\,dy$ for $D=\left\{6\,y^{30} \le x^7 \le 8\,y^{30},\ 5\,x^3 \le y^{13} \le 12\,x^3,\ x>0,\ y>0\right\}$

1) 4.84057×10^{105}

2) 1.25855×10^{106}

3) 2.5171×10^{106}

4) -5.80868×10^{105}

5) 9.68114×10^{105}

Exercise 2

Compute the volume of the domain limited by the plane $x+9\,z=4$ and the paraboloid $z=2\,x^2+2\,y^2$.

1) 0.139323

2) 0.12675

3) 0.171994

4) 0.15622

5) 0.237765

Exercise 3

Compute $\int_D (2\,y^4)\,dx\,dy\,dz$ for $D=$
$\left\{7\,x^8\,y^9\,z^8 \le 1 \le 15\,x^8\,y^9\,z^8,\ x^7\,y\,z \le 1 \le 10\,x^7\,y\,z,\ 5\,y^2 \le x^9\,z \le 7\,y^2,\ x>0,\ y>0,\ z>0\right\}$

1) 0.700169

2) 0.000169372

3) 0.600169

4) 1.20017

5) -1.19983

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 25

Exercise 1

Compute $\int_D (9\,x\,y)\,dx\,dy$ for $D=\left\{8\,y^{12}\le x^7\le 12\,y^{12},\ 7\,y^5\le x^3\le 14\,y^5,\ x>0,\ y>0\right\}$

1) 3.75088×10^{26}

2) 3.75088×10^{26}

3) -1.68789×10^{27}

4) 1.87544×10^{27}

5) 4.87614×10^{27}

Exercise 2

Compute the volume of the domain limited by the plane $x+8\,z=10$ and the paraboloid $z=3\,x^2+3\,y^2$.

1) 0.668798

2) 0.819828

3) 1.55516

4) 2.32636

5) 0.49313

Exercise 3

Compute $\int_D (2\,z+z^3)\,dx\,dy\,dz$ for $D=$
$\left\{5\,x^8\le z^5\le 9\,x^8,\ 7\,x^7\,z^5\le y^8\le 10\,x^7\,z^5,\ 1\le x^3\,y^5\,z^6\le 8,\ x>0,\ y>0,\ z>0\right\}$

1) 0.302053

2) -1.19795

3) 0.102053

4) -1.19795

5) 0.00205349

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 26

Exercise 1

Compute $\int_D (x + x^3)\, dx dy$ for $D = \left\{7\, y^3 \le x^{16} \le 15\, y^3,\ 9\, x^{21} \le y^4 \le 11\, x^{21},\ x > 0,\ y > 0\right\}$

1) 1.18143×10^{70}

2) -2.72637×10^{69}

3) 2.27197×10^{69}

4) -2.27197×10^{69}

5) 4.54394×10^{69}

Exercise 2

Compute the volume of the domain limited by the plane
$4\, x + 10\, z == 10$ and the paraboloid $z == 4\, x^2 + 4\, y^2$.

1) 1.43958

2) 1.33594

3) 0.163333

4) 0.716611

5) 0.400592

Exercise 3

Compute $\int_D (x\, z^3)\, dx dy dz$ for $D =$
$\left\{5\, x^2\, z^3 \le y^2 \le 11\, x^2\, z^3,\ 3\, z^2 \le x^6\, y^8 \le 12\, z^2,\ y^7 \le x^6\, z^3 \le 3\, y^7,\ x > 0,\ y > 0,\ z > 0\right\}$

1) 1.30015

2) -1.09985

3) 0.000149859

4) -1.59985

5) -1.29985

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 27

Exercise 1

Compute $\int_D (x^4)\,dx\,dy$ for $D=\left\{5\,y^2 \le x^3 \le 11\,y^2,\ 2\,y^5 \le x^8 \le 6\,y^5,\ x>0,\ y>0\right\}$

1) 2.61516×10^{-16}

2) $2.$

3) -0.8

4) 1.9

5) 0.8

Exercise 2

Compute the volume of the domain limited by the plane $2\,x+8\,z==8$ and the paraboloid $z==4\,x^2+4\,y^2$.

1) 0.713775

2) 0.289217

3) 0.395773

4) 0.25276

5) 0.171691

Exercise 3

Compute $\int_D (3\,x+z)\,dx\,dy\,dz$ for $D=$
$\left\{5\,x^7\,y^6\,z^7 \le 1 \le 11\,x^7\,y^6\,z^7,\ 9 \le x^9\,z \le 11,\ 7\,x^2\,z^6 \le y^4 \le 8\,x^2\,z^6,\ x>0,\ y>0,\ z>0\right\}$

1) -1.19986

2) -0.299863

3) 0.000137154

4) 0.300137

5) 1.10014

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 28

Exercise 1

Compute $\int_D (2\,x^3\,y)\,dx\,dy$ for $D=\{9\,y^2 \le x^5 \le 10\,y^2,\ 2\,x^2 \le y \le 10\,x^2,\ x>0,\ y>0\}$

1) -7.91018×10^{23}

2) 1.02832×10^{24}

3) 2.37305×10^{24}

4) 7.91018×10^{23}

5) 1.02832×10^{24}

Exercise 2

Compute the volume of the domain limited by the plane $10\,x+8\,z=3$ and the paraboloid $z=2\,x^2+2\,y^2$.

1) 0.255456

2) 0.17857

3) 0.809877

4) 1.07778

5) 0.125045

Exercise 3

Compute $\int_D (x+z^2)\,dx\,dy\,dz$ for $D=$
$\{6 \le x^6\,y^6 \le 15,\ 4\,y^3 \le x^6\,z^4 \le 11\,y^3,\ 8\,y \le x^4\,z^9 \le 10\,y,\ x>0,\ y>0,\ z>0\}$

1) 0.802462

2) 1.70246

3) 1.70246

4) 0.202462

5) 0.00246229

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 29

Exercise 1

Compute $\int_D (x^2 + y^2)\,dx\,dy$ for $D = \{1 \le x\,y \le 7,\ 1 \le x\,y^2 \le 4,\ x > 0,\ y > 0\}$

1) 316.398

2) 4271.38

3) 158.199

4) 1581.99

5) −158.199

Exercise 2

Compute the volume of the domain limited by the plane $x + 7\,z == 4$ and the paraboloid $z == 4\,x^2 + 4\,y^2$.

1) 0.560051

2) 0.109233

3) 0.128801

4) 0.107933

5) 0.174994

Exercise 3

Compute $\int_D (x^3)\,dx\,dy\,dz$ for $D =$
$\{5\,x^9\,y^6\,z^4 \le 1 \le 12\,x^9\,y^6\,z^4,\ 6\,y^5\,z^9 \le x^5 \le 10\,y^5\,z^9,\ 3\,x^5 \le y^9\,z \le 10\,x^5,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.10023

2) −0.79977

3) 0.000230111

4) −0.59977

5) 1.80023

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 30

Exercise 1

Compute $\int_D (3x + x^3)\,dx\,dy$ for $D = \{4 \le xy \le 5,\ 5x^3y^2 \le 1 \le 13x^3y^2,\ x > 0,\ y > 0\}$

1) 1.11846

2) 0.218462

3) 0.118462

4) 0.0184619

5) 1.31846

Exercise 2

Compute the volume of the domain limited by the plane $5x + 9z == 8$ and the paraboloid $z == 2x^2 + 2y^2$.

1) 0.675599

2) 2.84219

3) 0.24788

4) 2.83666

5) 0.42481

Exercise 3

Compute $\int_D (x + y^3)\,dx\,dy\,dz$ for $D = \{2z^6 \le y^9 \le 8z^6,\ 5 \le x^8y^5z^4 \le 8,\ 2y^2 \le x^5z^4 \le 8y^2,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.585229

2) 2.01477

3) 0.0147713

4) 0.814771

5) −0.985229

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 31

Exercise 1

Compute $\int_D (x^2)\,dx\,dy$ for $D=\left\{8\,x^{11}\le y^{20}\le 11\,x^{11},\ 8\,y^{71}\le x^{39}\le 17\,y^{71},\ x>0,\ y>0\right\}$

1) 0.1

2) −0.2

3) 1.1

4) −2.

5) 1.12015×10^{-296}

Exercise 2

Compute the volume of the domain limited by the plane $2\,x+z==10$ and the paraboloid $z==6\,x^2+6\,y^2$.

1) 132.913

2) 17.0118

3) 27.0599

4) 95.157

5) 23.6808

Exercise 3

Compute $\int_D (4\,y\,z)\,dx\,dy\,dz$ for $D=$

$\left\{6\,x^6\le y^7\le 14\,x^6,\ 8\,z^8\le x^5\,y\le 14\,z^8,\ 2\,y^9\le x\,z^9\le 8\,y^9,\ x>0,\ y>0,\ z>0\right\}$

1) 6.57384×10^{-79}

2) −0.7

3) 1.6

4) −1.9

5) 0.8

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 32

Exercise 1

Compute $\int_D (x\,y)\,dx\,dy$ for $D=\left\{y^{13} \le x^4 \le 7\,y^{13},\ 6\,y^{68} \le x^{21} \le 15\,y^{68},\ x>0,\ y>0\right\}$

1) 3.6892×10^{36}

2) 4.01×10^{36}

3) 1.1228×10^{36}

4) 1.604×10^{36}

5) 4.81199×10^{36}

Exercise 2

Compute the volume of the domain limited by the plane $8\,x+6\,z==1$ and the paraboloid $z==2\,x^2+2\,y^2$.

1) 0.557975

2) 0.118779

3) 0.232541

4) 0.103579

5) 0.102387

Exercise 3

Compute $\int_D (2\,x\,y)\,dx\,dy\,dz$ for $D=$
$\left\{8\,y \le x^6\,z^4 \le 10\,y,\ 6\,x^6\,y^8\,z^4 \le 1 \le 14\,x^6\,y^8\,z^4,\ 5\,x^9\,z^7 \le y^5 \le 12\,x^9\,z^7,\ x>0,\ y>0,\ z>0\right\}$

1) 0.542751

2) 0.842751

3) 0.942751

4) 0.0427508

5) 1.94275

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 33

Exercise 1

Compute $\int_D (x^2 + y^2)\,dx\,dy$ for $D = \{5\,y^8 \le x^5 \le 14\,y^8,\ 5\,y^{19} \le x^{12} \le 6\,y^{19},\ x > 0,\ y > 0\}$

1) 2.

2) 1.1

3) −0.6

4) 2.21531×10^{-24}

5) 0.4

Exercise 2

Compute the volume of the domain limited by the plane
$8\,x + 3\,z == 10$ and the paraboloid $z == 5\,x^2 + 5\,y^2$.

1) 4.27505

2) 11.7511

3) 2.1149

4) 8.77606

5) 1.74218

Exercise 3

Compute $\int_D (x + z^3)\,dx\,dy\,dz$ for $D =$
$\{8\,z^4 \le y^2 \le 17\,z^4,\ 8\,x^2\,z \le y \le 14\,x^2\,z,\ 3\,y^9\,z^4 \le 1 \le 9\,y^9\,z^4,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.000828738

2) −1.49917

3) −0.0991713

4) −1.49917

5) 1.80083

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 34

Exercise 1

Compute $\int_D (2\,y)\,dx\,dy$ for $D=\left\{7\,x^7\,y^{18} \le 1 \le 16\,x^7\,y^{18},\ 6 \le x^{16}\,y^{41} \le 8,\ x>0,\ y>0\right\}$

1) 7.47839×10^{12}

2) 1.06834×10^{13}

3) 3.09819×10^{13}

4) 9.61508×10^{12}

5) 1.70935×10^{13}

Exercise 2

Compute the volume of the domain limited by the plane
$10\,x+2\,z=2$ and the paraboloid $z=3\,x^2+3\,y^2$.

1) 14.2288

2) 21.0023

3) 19.7412

4) 4.97782

5) 23.6612

Exercise 3

Compute $\int_D (x\,y)\,dx\,dy\,dz$ for $D=$
$\left\{6\,z^5 \le x^5\,y^8 \le 7\,z^5,\ y^3 \le x^5\,z^8 \le 4\,y^3,\ 8\,x^4\,z^8 \le y^6 \le 14\,x^4\,z^8,\ x>0,\ y>0,\ z>0\right\}$

1) −1.89276

2) −1.89276

3) 0.807241

4) 1.20724

5) 0.00724076

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 35

Exercise 1

Compute $\int_D (3x + x^2)\,dx\,dy$ for $D = \{7x^2y^9 \le 1 \le 10x^2y^9,\ 1 \le xy^4 \le 8,\ x > 0,\ y > 0\}$

1) 2.69323×10^{30}

2) 1.34662×10^{31}

3) 3.77052×10^{31}

4) 3.23188×10^{31}

5) -2.69323×10^{30}

Exercise 2

Compute the volume of the domain limited by the plane $6x + 9z == 2$ and the paraboloid $z == 5x^2 + 5y^2$.

1) 0.069187

2) 0.0392601

3) 0.0770237

4) 0.018772

5) 0.0298006

Exercise 3

Compute $\int_D (y^2 + z^3)\,dx\,dy\,dz$ for $D =$
$\{3xy^6 \le z^9 \le 5xy^6,\ z^3 \le x^9y^2 \le 10z^3,\ 5z^4 \le x^7y^7 \le 9z^4,\ x > 0,\ y > 0,\ z > 0\}$

1) -1.27514

2) 0.224865

3) -1.07514

4) 0.0248648

5) -1.47514

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 36

Exercise 1

Compute $\int_D (y^4)\,dx\,dy$ for $D=\{9 \le x\,y^7 \le 16,\ 6 \le x\,y^8 \le 9,\ x>0,\ y>0\}$

1) 10.392

2) 12.124

3) 25.9799

4) 8.65998

5) 25.1139

Exercise 2

Compute the volume of the domain limited by the plane $7\,x + 2\,z == 4$ and the paraboloid $z == 4\,x^2 + 4\,y^2$.

1) 3.00363

2) 4.26919

3) 14.9518

4) 9.25753

5) 4.5355

Exercise 3

Compute $\int_D (2\,y + z^2)\,dx\,dy\,dz$ for $D=$
$\{5\,y^5\,z^6 \le x^3 \le 14\,y^5\,z^6,\ 7\,x\,z^5 \le y^9 \le 13\,x\,z^5,\ 3\,x^7 \le y^4 \le 4\,x^7,\ x>0,\ y>0,\ z>0\}$

1) 1.9005

2) 1.6005

3) 1.7005

4) 0.000500236

5) 0.8005

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 37

Exercise 1

Compute $\int_D (x^3 + y)\,dx\,dy$ for $D = \left\{3\,y^3 \le x^7 \le 7\,y^3,\ 3\,x^{30} \le y^{13} \le 7\,x^{30},\ x > 0,\ y > 0\right\}$

1) 1.45323×10^{82}

2) -1.45323×10^{82}

3) -8.71938×10^{81}

4) 4.21437×10^{82}

5) 1.59855×10^{82}

Exercise 2

Compute the volume of the domain limited by the plane $x + 2\,z == 10$ and the paraboloid $z == 4\,x^2 + 4\,y^2$.

1) 6.43979

2) 9.87893

3) 0.853614

4) 14.9354

5) 14.2315

Exercise 3

Compute $\int_D (x\,z)\,dx\,dy\,dz$ for $D = \left\{9\,x^9\,y^3 \le 1 \le 11\,x^9\,y^3,\ 3 \le x^8\,y^2\,z^7 \le 6,\ 2 \le x^7\,y^8\,z^5 \le 7,\ x > 0,\ y > 0,\ z > 0\right\}$

1) 0.000772518

2) -0.399227

3) 0.900773

4) 0.300773

5) 1.20077

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 38

Exercise 1

Compute $\int_D (2\,y^2)\,dx\,dy$ for $D=\{2\,y \le x^2 \le 4\,y,\ 6\,x \le y \le 12\,x,\ x>0,\ y>0\}$

1) 1.64554×10^9

2) $0.$

3) 9.75137×10^8

4) -3.65676×10^8

5) 6.09461×10^8

Exercise 2

Compute the volume of the domain limited by the plane $5\,x+10\,z=3$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 0.0391203

2) 0.0619381

3) 0.075792

4) 0.118182

5) 0.0526978

Exercise 3

Compute $\int_D (x^3\,z^3)\,dx\,dy\,dz$ for $D=\{7\,y^5 \le z^8 \le 9\,y^5,\ 8 \le x^3\,y^5\,z^5 \le 17,\ 3\,x^7 \le y^4\,z^2 \le 6\,x^7,\ x>0,\ y>0,\ z>0\}$

1) -1.89899

2) 0.00100663

3) -0.0989934

4) -1.59899

5) 0.301007

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 39

Exercise 1

Compute $\int_D (x^2 + y)\,dx\,dy$ for $D = \{2 \le x\,y^3 \le 5,\ 1 \le x^2\,y^7 \le 10,\ x > 0,\ y > 0\}$

1) 1.75677×10^{11}

2) 1.25483×10^{11}

3) $0.$

4) 1.00387×10^{11}

5) -2.50967×10^{10}

Exercise 2

Compute the volume of the domain limited by the plane $3\,x + 6\,z == 2$ and the paraboloid $z == 7\,x^2 + 7\,y^2$.

1) 0.0347735

2) 0.0262869

3) 0.0444534

4) 0.106239

5) 0.0754901

Exercise 3

Compute $\int_D (3\,x\,y)\,dx\,dy\,dz$ for $D =$
$\{9\,x^4\,y \le 1 \le 12\,x^4\,y,\ 9\,x^5 \le y^7\,z^3 \le 16\,x^5,\ 6 \le x^6\,y^6\,z^2 \le 11,\ x > 0,\ y > 0,\ z > 0\}$

1) 30.1708

2) 11.1744

3) -4.46975

4) 30.1708

5) 17.879

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 40

Exercise 1

Compute $\int_D (x^6)\,dx\,dy$ for $D=\left\{3\,y^8 \le x^{17} \le 6\,y^8,\ 2\,x^2 \le y \le 6\,x^2,\ x>0,\ y>0\right\}$

1) 2.24758×10^{61}

2) 2.54075×10^{61}

3) 9.7721×10^{60}

4) 9.7721×10^{59}

5) -9.7721×10^{60}

Exercise 2

Compute the volume of the domain limited by the plane
$7\,x+9\,z=3$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 0.0315282

2) 0.0879752

3) 0.0810815

4) 0.0608858

5) 0.0282701

Exercise 3

Compute $\int_D (x^3\,y^3)\,dx\,dy\,dz$ for $D=$
$\left\{2\,y^9\,z^5 \le x^4 \le 6\,y^9\,z^5,\ 7\,x^8 \le y^2\,z^8 \le 16\,x^8,\ 9\,x^7\,y^6 \le z^3 \le 13\,x^7\,y^6,\ x>0,\ y>0,\ z>0\right\}$

1) 0.702359

2) -0.997641

3) -0.997641

4) 0.00235864

5) 1.00236

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 41

Exercise 1

Compute $\int_D (3\,x^3)\,dx\,dy$ for $D=\left\{2\,x^{17}\,y^6 \le 1 \le 6\,x^{17}\,y^6,\ 2 \le x^{54}\,y^{19} \le 4,\ x>0,\ y>0\right\}$

1) 6.66902×10^{19}

2) 5.83539×10^{19}

3) 4.16813×10^{19}

4) 2.91769×10^{19}

5) 1.66725×10^{19}

Exercise 2

Compute the volume of the domain limited by the plane $9\,x+2\,z==1$ and the paraboloid $z==10\,x^2+10\,y^2$.

1) 0.126505

2) 0.159049

3) 0.123311

4) 0.349444

5) 0.115935

Exercise 3

Compute $\int_D (3\,y+y^2)\,dx\,dy\,dz$ for $D=$
$\left\{7\,x^9\,y \le z^5 \le 13\,x^9\,y,\ 3\,z^6 \le x^9\,y^4 \le 12\,z^6,\ 3\,x^7\,y^5 \le z^6 \le 5\,x^7\,y^5,\ x>0,\ y>0,\ z>0\right\}$

1) -1.59586×10^{9}

2) 1.59586×10^{9}

3) 4.78759×10^{9}

4) 2.07462×10^{9}

5) 2.71297×10^{9}

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 42

Exercise 1

Compute $\int_D (2\,y^2)\,dx\,dy$ for $D=\{5 \le x^7\,y^9 \le 11,\ 4 \le x^3\,y^4 \le 13,\ x>0,\ y>0\}$

1) 4.38643×10^8

2) 7.31072×10^8

3) 2.43691×10^7

4) -9.74763×10^7

5) 2.43691×10^8

Exercise 2

Compute the volume of the domain limited by the plane $8\,x+6\,z=9$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 1.14223

2) 0.548546

3) 0.339612

4) 1.46409

5) 1.12172

Exercise 3

Compute $\int_D (x^2\,z^2)\,dx\,dy\,dz$ for $D=$
$\{8\,x^7\,y^4\,z^2 \le 1 \le 14\,x^7\,y^4\,z^2,\ 3\,x^7\,y^3 \le z \le 6\,x^7\,y^3,\ 5\,x \le y^9\,z^8 \le 9\,x,\ x>0,\ y>0,\ z>0\}$

1) -1.09986

2) -0.299863

3) 0.00013742

4) -0.0998626

5) 1.00014

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 43

Exercise 1

Compute $\int_D (x + x^3)\, dx dy$ for $D = \{5 \le x^3 y^2 \le 11,\ 8 x^{14} y^9 \le 1 \le 12 x^{14} y^9,\ x > 0,\ y > 0\}$

1) -0.499984

2) 0.0000159552

3) 1.40002

4) -1.29998

5) 1.50002

Exercise 2

Compute the volume of the domain limited by the plane $4 x + 2 z == 1$ and the paraboloid $z == 6 x^2 + 6 y^2$.

1) 0.116355

2) 0.416042

3) 0.102764

4) 0.525972

5) 0.104257

Exercise 3

Compute $\int_D (x^3 + 2 z)\, dx dy dz$ for $D =$
$\{7 z^9 \le x^3 y^5 \le 12 z^9,\ 8 y^4 \le x^2 z^6 \le 12 y^4,\ 7 \le y^2 z^3 \le 16,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.45116

2) -0.64884

3) -1.14884

4) 0.25116

5) -0.64884

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 44

Exercise 1

Compute $\int_D (2x + 2y)\,dx\,dy$ for $D = \{2x \le y^3 \le 6x,\ 3x \le y^2 \le 6x,\ x > 0,\ y > 0\}$

1) 1.31105

2) 0.811046

3) 0.711046

4) 0.611046

5) 0.911046

Exercise 2

Compute the volume of the domain limited by the plane $x + 6z = 6$ and the paraboloid $z = x^2 + y^2$.

1) 2.57142

2) 1.1019

3) 1.59269

4) 6.82738

5) 0.256158

Exercise 3

Compute $\int_D (x^3 z^3)\,dx\,dy\,dz$ for $D = \{x^9 y^4 z^8 \le 1 \le 3x^9 y^4 z^8,\ 7y^3 \le x z^8 \le 16 y^3,\ 1 \le x^9 y^9 z \le 2,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.101841

2) 0.00184088

3) 1.00184

4) 1.50184

5) 0.801841

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 45

Exercise 1

Compute $\int_D (3\,y^2)\,dx\,dy$ for $D=\left\{5\,y^{20} \le x^9 \le 12\,y^{20},\ 4\,y^{31} \le x^{14} \le 7\,y^{31},\ x>0,\ y>0\right\}$

1) 1.5

2) −0.1

3) 1.4

4) 0.4

5) 4.3301×10^{-15}

Exercise 2

Compute the volume of the domain limited by the plane
$6\,x+10\,z=9$ and the paraboloid $z=10\,x^2+10\,y^2$.

1) 0.114929

2) 0.129792

3) 0.116243

4) 0.622887

5) 0.109864

Exercise 3

Compute $\int_D (4\,x)\,dx\,dy\,dz$ for $D=\left\{4\,y^3 \le x^2 \le 13\,y^3,\ 2\,y^2 \le x^4\,z^8 \le 8\,y^2,\ 9 \le x^3\,y^6\,z \le 13,\ x>0,\ y>0,\ z>0\right\}$

1) 1.47222

2) 0.172221

3) 0.572221

4) 0.0722207

5) 1.57222

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 46

Exercise 1

Compute $\int_D (2x + y^3)\,dx\,dy$ for $D = \{3x^9 \le y^4 \le 5x^9,\ 7y \le x^2 \le 12y,\ x > 0,\ y > 0\}$

1) 1.3

2) 1.

3) 1.35845×10^{-18}

4) −0.5

5) −0.8

Exercise 2

Compute the volume of the domain limited by the plane
$3x + 3z == 1$ and the paraboloid $z == 8x^2 + 8y^2$.

1) 0.112902

2) 0.0962446

3) 0.10275

4) 0.0576784

5) 0.026099

Exercise 3

Compute $\int_D (x^2 y)\,dx\,dy\,dz$ for $D =$
$\{7x^4 z^9 \le y^8 \le 10x^4 z^9,\ 5y^6 z^5 \le x^5 \le 10y^6 z^5,\ 8y \le x^7 z^5 \le 17y,\ x > 0,\ y > 0,\ z > 0\}$

1) −1.39788

2) 0.00211847

3) −1.79788

4) −1.79788

5) 1.40212

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 47

Exercise 1

Compute $\int_D (3y + y^2)\,dx\,dy$ for $D = \{3x^{11} \le y^{19} \le 11x^{11},\ 6y^7 \le x^4 \le 11y^7,\ x > 0,\ y > 0\}$

1) 0.3

2) −1.7

3) 0.2

4) 4.23864×10^{-42}

5) −0.2

Exercise 2

Compute the volume of the domain limited by the plane
$4x + 4z = 9$ and the paraboloid $z = 6x^2 + 6y^2$.

1) 6.03472

2) 6.66178

3) 2.80752

4) 1.3749

5) 2.50507

Exercise 3

Compute $\int_D (x^5)\,dx\,dy\,dz$ for $D =$
$\{8x^3 z \le y^5 \le 11x^3 z,\ 3 \le x^2 y^9 z \le 12,\ x^2 y^9 \le z^9 \le 7x^2 y^9,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.60037

2) −0.899635

3) 1.90037

4) −0.399635

5) 0.000365155

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 48

Exercise 1

Compute $\int_D (x^5)\,dx\,dy$ for $D=\left\{4\,x\,y \le 1 \le 13\,x\,y,\ 3 \le x^3\,y^2 \le 9,\ x>0,\ y>0\right\}$

1) -2.77152×10^{12}

2) 3.88013×10^{13}

3) 1.80149×10^{13}

4) 1.38576×10^{13}

5) -2.77152×10^{12}

Exercise 2

Compute the volume of the domain limited by the plane
$5\,x+2\,z==3$ and the paraboloid $z==8\,x^2+8\,y^2$.

1) 0.234866

2) 0.425316

3) 2.04252

4) 0.564325

5) 1.62656

Exercise 3

Compute $\int_D (x\,y^3)\,dx\,dy\,dz$ for $D=\left\{3 \le y^7\,z^5 \le 10,\ 3 \le x^3\,y^7 \le 7,\ y^7 \le x^5\,z \le 3\,y^7,\ x>0,\ y>0,\ z>0\right\}$

1) -1.08853

2) -1.98853

3) 0.0114687

4) 0.311469

5) 1.31147

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 49

Exercise 1

Compute $\int_D (2\,x\,y^2)\,dx\,dy$ for $D=\{3 \le x^{14}\,y^{11} \le 5,\ 3 \le x^5\,y^4 \le 9,\ x>0,\ y>0\}$

1) -7.7192×10^{13}

2) 7.7192×10^{13}

3) 2.16138×10^{14}

4) 1.23507×10^{14}

5) 1.31226×10^{14}

Exercise 2

Compute the volume of the domain limited by the plane $3\,x+2\,z=7$ and the paraboloid $z=9\,x^2+9\,y^2$.

1) 5.01628

2) 0.191957

3) 1.09957

4) 2.21507

5) 6.36592

Exercise 3

Compute $\int_D (x^2+y)\,dx\,dy\,dz$ for $D=$
$\{x^4\,y \le z^2 \le 6\,x^4\,y,\ 6\,z \le x^4\,y^8 \le 15\,z,\ 3\,y^4\,z^4 \le 1 \le 6\,y^4\,z^4,\ x>0,\ y>0,\ z>0\}$

1) -0.692779

2) 0.907221

3) 0.507221

4) 0.00722058

5) 0.707221

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 50

Exercise 1

Compute $\int_D (y^3)\,dx\,dy$ for $D=\{1 \le x^2 y \le 10,\ 2 \le x y \le 7,\ x > 0,\ y > 0\}$

1) 0.

2) 31 336.8

3) 117 513.

4) −3917.1

5) 39 171.

Exercise 2

Compute the volume of the domain limited by the plane
$8 x + 10 z == 4$ and the paraboloid $z == 4 x^2 + 4 y^2$.

1) 0.0760265

2) 0.327554

3) 0.0791127

4) 0.139873

5) 0.365129

Exercise 3

Compute $\int_D (y^2 + z^2)\,dx\,dy\,dz$ for $D=$
$\{y^6 \le x^6 z^5 \le 2 y^6,\ 5 x^8 y^7 \le z^9 \le 14 x^8 y^7,\ 7 y^2 z^4 \le x^3 \le 11 y^2 z^4,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.000154061

2) 1.50015

3) −1.59985

4) 0.400154

5) 2.00015

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 51

Exercise 1

Compute $\int_D (3\,y^2)\,dx\,dy$ for $D=\left\{2\,y^2 \le x^5 \le 8\,y^2,\ 8\,x^2 \le y \le 10\,x^2,\ x>0,\ y>0\right\}$

1) -3.6173×10^{21}

2) -5.16757×10^{20}

3) 5.16757×10^{21}

4) 3.10054×10^{21}

5) 1.39524×10^{22}

Exercise 2

Compute the volume of the domain limited by the plane $10\,x+8\,z=5$ and the paraboloid $z=8\,x^2+8\,y^2$.

1) 0.225328

2) 0.17669

3) 0.0889301

4) 0.0891514

5) 0.391837

Exercise 3

Compute $\int_D (x+z^3)\,dx\,dy\,dz$ for $D=$
$\left\{2\,x^4\,y^2\,z^3 \le 1 \le 4\,x^4\,y^2\,z^3,\ 5\,x^5 \le y\,z^7 \le 9\,x^5,\ 8 \le x^3\,y^6\,z^3 \le 13,\ x>0,\ y>0,\ z>0\right\}$

1) 1.30138

2) 1.60138

3) 0.001383

4) 1.30138

5) −1.09862

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 52

Exercise 1

Compute $\int_D (3\,y)\,dx\,dy$ for $D=\{9\,x^5\,y^2 \le 1 \le 18\,x^5\,y^2,\ 9 \le x^8\,y^3 \le 18,\ x>0,\ y>0\}$

1) 1.3

2) −1.4

3) 2.62568×10^{-22}

4) −0.4

5) −0.9

Exercise 2

Compute the volume of the domain limited by the plane $2\,x+2\,z=7$ and the paraboloid $z=3\,x^2+3\,y^2$.

1) 0.391298

2) 6.72315

3) 32.7601

4) 29.1891

5) 2.25697

Exercise 3

Compute $\int_D (y^2)\,dx\,dy\,dz$ for $D=$
$\{4\,x^7\,y^4\,z^5 \le 1 \le 7\,x^7\,y^4\,z^5,\ 3\,x^3 \le y\,z^8 \le 4\,x^3,\ 3\,x^7\,y \le z^7 \le 10\,x^7\,y,\ x>0,\ y>0,\ z>0\}$

1) 2958.84

2) −219.174

3) 2520.5

4) −109.587

5) 1095.87

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 53

Exercise 1

Compute $\int_D (x+y)\,dx\,dy$ for $D=\left\{4 \le x^{16} y^{13} \le 10,\ 3 x^{53} y^{43} \le 1 \le 9 x^{53} y^{43},\ x>0,\ y>0\right\}$

1) 1.9185×10^{78}

2) 2.03136×10^{78}

3) -4.51412×10^{77}

4) 1.12853×10^{78}

5) 1.24138×10^{78}

Exercise 2

Compute the volume of the domain limited by the plane $3x+5z=9$ and the paraboloid $z=2x^2+2y^2$.

1) 2.67351

2) 7.60905

3) 10.051

4) 1.49125

5) 1.66897

Exercise 3

Compute $\int_D (x^3+2y)\,dx\,dy\,dz$ for $D=$
$\left\{6 x^5 z^5 \le y^7 \le 10 x^5 z^5,\ 4 x^9 z \le y^3 \le 9 x^9 z,\ x \le y^4 z^5 \le 9x,\ x>0,\ y>0,\ z>0\right\}$

1) -0.191616

2) 1.40838

3) 1.60838

4) -0.591616

5) 0.00838419

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 54

Exercise 1

Compute $\int_D (2\,x)\,dx\,dy$ for $D=\{4\,x\,y \le 1 \le 13\,x\,y,\ 3 \le x^2\,y \le 4,\ x>0,\ y>0\}$

1) 4.71462

2) 3.53596

3) −2.12158

4) 6.60047

5) 2.35731

Exercise 2

Compute the volume of the domain limited by the plane $7\,x+2\,z=10$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 3.34296

2) 9.81504

3) 26.2574

4) 46.2679

5) 13.0543

Exercise 3

Compute $\int_D (y^3+3\,z)\,dx\,dy\,dz$ for $D=$
$\{4\,y^3 \le x^3 \le 7\,y^3,\ 7\,y^9\,z^6 \le x^2 \le 13\,y^9\,z^6,\ 4\,x^7\,z^8 \le y^9 \le 11\,x^7\,z^8,\ x>0,\ y>0,\ z>0\}$

1) 0.0163013

2) −0.283699

3) −1.6837

4) −1.1837

5) −1.2837

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 55

Exercise 1

Compute $\int_D (3x + x^2)\,dx\,dy$ for $D = \{x^4 y^3 \le 1 \le 3 x^4 y^3,\ 5xy \le 1 \le 9xy,\ x > 0,\ y > 0\}$

1) 5027.02

2) 15 081.1

3) −2513.51

4) 502.702

5) −2513.51

Exercise 2

Compute the volume of the domain limited by the plane $3x + 4z == 8$ and the paraboloid $z == 2x^2 + 2y^2$.

1) 3.36637

2) 4.13048

3) 10.149

4) 2.3904

5) 5.62861

Exercise 3

Compute $\int_D (4x)\,dx\,dy\,dz$ for $D = \{x^5 z^4 \le y^4 \le 6 x^5 z^4,\ 2 x^8 z^5 \le y \le 4 x^8 z^5,\ 6 y^8 \le x^7 z^8 \le 15 y^8,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.0965068

2) −0.703493

3) 0.796507

4) 0.396507

5) 0.196507

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 56

Exercise 1

Compute $\int_D (4\,x^2)\,dx\,dy$ for $D=\left\{7\,y^2 \le x^3 \le 13\,y^2,\ 8\,x \le y \le 9\,x,\ x>0,\ y>0\right\}$

1) 2.20793×10^{12}

2) 1.47195×10^{12}

3) 7.35976×10^{11}

4) -7.35976×10^{10}

5) 2.20793×10^{12}

Exercise 2

Compute the volume of the domain limited by the plane
$5\,x+10\,z=5$ and the paraboloid $z=6\,x^2+6\,y^2$.

1) 0.255132

2) 0.253611

3) 0.0826066

4) 0.0682053

5) 0.0756057

Exercise 3

Compute $\int_D (x^2+z^2)\,dx\,dy\,dz$ for $D=$
$\left\{4\,y^2\,z^4 \le 1 \le 7\,y^2\,z^4,\ 3\,z^2 \le x^5\,y^4 \le 6\,z^2,\ 8\,x^4\,z^7 \le y^5 \le 11\,x^4\,z^7,\ x>0,\ y>0,\ z>0\right\}$

1) -0.799345

2) 0.000654892

3) 0.300655

4) 0.100655

5) 0.900655

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 57

Exercise 1

Compute $\int_D (4\,x)\,dx\,dy$ for $D=\{1 \le x^4\,y \le 10,\ 2 \le x^3\,y \le 11,\ x>0,\ y>0\}$

1) 105.3

2) 631.8

3) −21.06

4) 400.14

5) 210.6

Exercise 2

Compute the volume of the domain limited by the plane $2\,x+z==1$ and the paraboloid $z==5\,x^2+5\,y^2$.

1) 0.383519

2) 1.03489

3) 1.58369

4) 0.452389

5) 0.122095

Exercise 3

Compute $\int_D (x^4)\,dx\,dy\,dz$ for $D=$
$\{7\,x^3\,y^7\,z^9 \le 1 \le 12\,x^3\,y^7\,z^9,\ 6\,x^7 \le y^5\,z^5 \le 13\,x^7,\ 6 \le x^4\,y^5\,z^3 \le 13,\ x>0,\ y>0,\ z>0\}$

1) −1.29949

2) 1.10051

3) 0.00051193

4) 0.500512

5) 1.20051

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 58

Exercise 1

Compute $\int_D (x^2)\,dx\,dy$ for $D=\left\{7\,x^8 \le y^{19} \le 11\,x^8,\ 7\,x^3 \le y^7 \le 15\,x^3,\ x>0,\ y>0\right\}$

1) -1.7

2) 1.2

3) 0.2

4) $1.$

5) 7.39467×10^{-34}

Exercise 2

Compute the volume of the domain limited by the plane
$x+9\,z==10$ and the paraboloid $z==7\,x^2+7\,y^2$.

1) 0.277256

2) 0.424416

3) 0.104388

4) 1.1297

5) 0.677573

Exercise 3

Compute $\int_D (y^6)\,dx\,dy\,dz$ for $D=$
$\left\{x^8\,y^7 \le z^2 \le 2\,x^8\,y^7,\ 8\,x^3\,z^2 \le y^7 \le 15\,x^3\,z^2,\ 5\,x^4\,y^3\,z^3 \le 1 \le 9\,x^4\,y^3\,z^3,\ x>0,\ y>0,\ z>0\right\}$

1) 1.70101

2) 0.0010113

3) 1.70101

4) -1.19899

5) 0.801011

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 59

Exercise 1

Compute $\int_D (3\,x^2)\,dx\,dy$ for $D=\{8\,y^2 \le x^3 \le 16\,y^2,\ 5\,y \le x^2 \le 10\,y,\ x>0,\ y>0\}$

1) 5114.4

2) 1376.95

3) 590.123

4) 1967.08

5) 3737.45

Exercise 2

Compute the volume of the domain limited by the plane $3\,x+3\,z==3$ and the paraboloid $z==7\,x^2+7\,y^2$.

1) 1.12108

2) 0.11097

3) 0.240714

4) 0.192806

5) 0.378346

Exercise 3

Compute $\int_D (x^2+y)\,dx\,dy\,dz$ for $D=$
$\{7\,x^5\,y\,z^8 \le 1 \le 9\,x^5\,y\,z^8,\ 9\,y^5\,z^5 \le x^7 \le 14\,y^5\,z^5,\ 8\,x^3\,y\,z^7 \le 1 \le 14\,x^3\,y\,z^7,\ x>0,\ y>0,\ z>0\}$

1) 0.0198427

2) -0.880157

3) -0.580157

4) -0.780157

5) 2.01984

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 60

Exercise 1

Compute $\int_D (x^4)\,dx\,dy$ for $D=\left\{5\,x^{14} \le y^3 \le 6\,x^{14},\ 7\,x^5 \le y \le 14\,x^5,\ x>0,\ y>0\right\}$

1) -1.6

2) 1.5

3) $-1.$

4) 5.42965×10^{-20}

5) 0.8

Exercise 2

Compute the volume of the domain limited by the plane
$2\,x+10\,z=7$ and the paraboloid $z=9\,x^2+9\,y^2$.

1) 0.28573

2) 0.0853367

3) 0.0857928

4) 0.397424

5) 0.095773

Exercise 3

Compute $\int_D (y^3+z)\,dx\,dy\,dz$ for $D=$
$\left\{4\,x^6 \le y\,z^6 \le 12\,x^6,\ 3\,y^8 \le x^5\,z^6 \le 8\,y^8,\ 9\,y^3 \le x^6 \le 10\,y^3,\ x>0,\ y>0,\ z>0\right\}$

1) 3.91256

2) 1.79326

3) 1.14116

4) 1.63024

5) 4.72768

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 61

Exercise 1

Compute $\int_D (x^4)\,dx\,dy$ for $D=\left\{8\,x^{14}\,y^5 \le 1 \le 16\,x^{14}\,y^5,\ 7 \le x^3\,y \le 14,\ x>0,\ y>0\right\}$

1) 1.02441×10^{14}

2) -7.06488×10^{12}

3) -3.1792×10^{13}

4) 1.02441×10^{14}

5) 3.53244×10^{13}

Exercise 2

Compute the volume of the domain limited by the plane $9\,x+2\,z=4$ and the paraboloid $z=5\,x^2+5\,y^2$.

1) 0.675178

2) 6.29168

3) 3.46537

4) 2.85104

5) 5.20972

Exercise 3

Compute $\int_D (2\,y+2\,z)\,dx\,dy\,dz$ for $D=$
$\left\{7\,y^2 \le x^7\,z^5 \le 11\,y^2,\ 6\,x^6 \le y^7\,z^3 \le 8\,x^6,\ 9\,y^4\,z^4 \le x^4 \le 13\,y^4\,z^4,\ x>0,\ y>0,\ z>0\right\}$

1) -0.450192

2) -0.0501918

3) -0.950192

4) 0.149808

5) 0.249808

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 62

Exercise 1

Compute $\int_D (2x+y)\,dx\,dy$ for $D=\{1 \le x^4 y^{15} \le 9,\ 8 \le x y^4 \le 13,\ x>0,\ y>0\}$

1) -1.5

2) 1.2

3) 2.63372×10^{-6}

4) 0.600003

5) -0.299997

Exercise 2

Compute the volume of the domain limited by the plane $10x+4z=9$ and the paraboloid $z=4x^2+4y^2$.

1) 5.6945

2) 2.20094

3) 6.24853

4) 2.05984

5) 2.73825

Exercise 3

Compute $\int_D (4xy)\,dx\,dy\,dz$ for $D=$
$\{3y^2z^2 \le x^2 \le 11y^2z^2,\ 5x^4z^9 \le y^3 \le 9x^4z^9,\ 2z^3 \le x^3y^8 \le 10z^3,\ x>0,\ y>0,\ z>0\}$

1) -0.180418

2) 0.0195823

3) 1.31958

4) -0.880418

5) -1.28042

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 63

Exercise 1

Compute $\int_D (3\,x^4)\,dx\,dy$ for $D=\left\{1 \le x^4\,y^{23} \le 9,\ x^3\,y^{17} \le 1 \le 10\,x^3\,y^{17},\ x>0,\ y>0\right\}$

1) 1.00033

2) −0.0996704

3) 0.000329598

4) −0.39967

5) 0.40033

Exercise 2

Compute the volume of the domain limited by the plane $9\,x+5\,z=2$ and the paraboloid $z=10\,x^2+10\,y^2$.

1) 0.0789087

2) 0.0932166

3) 0.105228

4) 0.0745428

5) 0.0363421

Exercise 3

Compute $\int_D (x+3\,y)\,dx\,dy\,dz$ for $D=$
$\left\{4\,y^8 \le x^7\,z^9 \le 8\,y^8,\ 8\,x^8 \le y^6\,z^6 \le 13\,x^8,\ 1 \le x^7\,y^7\,z^9 \le 4,\ x>0,\ y>0,\ z>0\right\}$

1) 0.501029

2) 0.00102874

3) 1.70103

4) −1.19897

5) −1.09897

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 64

Exercise 1

Compute $\int_D (x + y^3)\,dx\,dy$ for $D = \{y^3 \le x^5 \le 9\,y^3,\ 4\,y \le x^2 \le 6\,y,\ x > 0,\ y > 0\}$

1) 5.34069×10^{15}

2) -3.05183×10^{15}

3) -3.81478×10^{14}

4) 6.48513×10^{15}

5) 3.81478×10^{15}

Exercise 2

Compute the volume of the domain limited by the plane $4\,x + 9\,z == 8$ and the paraboloid $z == x^2 + y^2$.

1) 0.135272

2) 2.22641

3) 6.57404

4) 1.38286

5) 5.88292

Exercise 3

Compute $\int_D (x\,y)\,dx\,dy\,dz$ for $D = \{7\,z^9 \le y^5 \le 12\,z^9,\ 5\,x^6\,y^2\,z^2 \le 1 \le 9\,x^6\,y^2\,z^2,\ 9\,x \le y^3\,z \le 11\,x,\ x > 0,\ y > 0,\ z > 0\}$

1) -1.89967

2) 0.200335

3) -0.299665

4) 1.50033

5) 0.000334556

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 65

Exercise 1

Compute $\int_D (3\,y^3)\,dx\,dy$ for $D=\{8\,y^2 \le x \le 11\,y^2,\ 2\,x \le y^3 \le 6\,x,\ x>0,\ y>0\}$

1) -5.7874×10^{10}

2) 5.20866×10^{10}

3) 2.31496×10^{10}

4) 6.94488×10^{10}

5) 5.7874×10^{10}

Exercise 2

Compute the volume of the domain limited by the plane
$10\,x+8\,z==9$ and the paraboloid $z==6\,x^2+6\,y^2$.

1) 1.32297

2) 0.532827

3) 0.370799

4) 0.144724

5) 0.324247

Exercise 3

Compute $\int_D (2\,x^3\,y)\,dx\,dy\,dz$ for $D=$
$\{3 \le x^5\,y^2\,z^2 \le 9,\ 4\,y^7\,z^6 \le x^3 \le 6\,y^7\,z^6,\ 3\,x^9\,y^8\,z^4 \le 1 \le 12\,x^9\,y^8\,z^4,\ x>0,\ y>0,\ z>0\}$

1) -0.590579

2) -0.390579

3) 0.00942088

4) 1.90942

5) 1.10942

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 66

Exercise 1

Compute $\int_D (x^3 + 3y)\,dx\,dy$ for $D = \{3y^3 \le x^5 \le 6y^3,\ 7y \le x^2 \le 14y,\ x > 0,\ y > 0\}$

1) -2.42278×10^{14}

2) 7.26835×10^{14}

3) 4.03797×10^{14}

4) 5.24936×10^{14}

5) 1.21139×10^{15}

Exercise 2

Compute the volume of the domain limited by the plane $5x + 8z = 1$ and the paraboloid $z = 8x^2 + 8y^2$.

1) 0.0419323

2) 0.0137207

3) 0.0338006

4) 0.00580598

5) 0.00369643

Exercise 3

Compute $\int_D (x^3)\,dx\,dy\,dz$ for $D = \{4x \le y z^6 \le 11x,\ 1 \le x^2 y^4 z^4 \le 7,\ 8x^6 y \le z^4 \le 14x^6 y,\ x > 0,\ y > 0,\ z > 0\}$

1) -0.992002

2) 0.807998

3) 0.107998

4) 0.407998

5) 0.00799842

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 67

Exercise 1

Compute $\int_D (2\,y)\,dx\,dy$ for $D=\left\{x^5 \le y^3 \le 4\,x^5,\ 6\,x^2 \le y \le 10\,x^2,\ x>0,\ y>0\right\}$

1) -0.7

2) -1.1

3) -0.4

4) 2.4069×10^{-9}

5) -0.1

Exercise 2

Compute the volume of the domain limited by the plane
$x+10\,z==5$ and the paraboloid $z==7\,x^2+7\,y^2$.

1) 0.05618

2) 0.0810735

3) 0.0866405

4) 0.097736

5) 0.234542

Exercise 3

Compute $\int_D (x+z^2)\,dx\,dy\,dz$ for $D=$
$\left\{3\,x^8\,z^3 \le y \le 10\,x^8\,z^3,\ 8\,y\,z^9 \le x^3 \le 17\,y\,z^9,\ 8\,x^4\,z \le y^4 \le 11\,x^4\,z,\ x>0,\ y>0,\ z>0\right\}$

1) 1.90167

2) 1.90167

3) -1.49833

4) 0.00166783

5) 0.201668

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 68

Exercise 1

Compute $\int_D (x^3\, y^3)\, dx dy$ for $D = \{5\, y \le x^2 \le 9\, y,\ y \le x^3 \le 6\, y,\ x > 0,\ y > 0\}$

1) 0.100074

2) −0.499926

3) 1.40007

4) −1.49993

5) 0.0000742947

Exercise 2

Compute the volume of the domain limited by the plane
$3\, x + 6\, z == 10$ and the paraboloid $z == 8\, x^2 + 8\, y^2$.

1) 0.439681

2) 0.340443

3) 0.550541

4) 2.24036

5) 0.158452

Exercise 3

Compute $\int_D (2\, y^3)\, dx dy dz$ for $D =$
$\{9\, x^4 \le z^3 \le 11\, x^4,\ 6\, x^4\, z^7 \le y^3 \le 13\, x^4\, z^7,\ 7\, x^2 \le y^3\, z^9 \le 16\, x^2,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.1019

2) 0.00189967

3) −1.4981

4) −1.8981

5) −0.2981

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 69

Exercise 1

Compute $\int_D (y + y^2)\,dx\,dy$ for $D = \{x^{11} \le y^3 \le 4\,x^{11},\ 7\,x^4 \le y \le 16\,x^4,\ x > 0,\ y > 0\}$

1) 0.3

2) 0.6

3) 1.2

4) −2.

5) 8.6877×10^{-19}

Exercise 2

Compute the volume of the domain limited by the plane $7\,x + 2\,z == 6$ and the paraboloid $z == 4\,x^2 + 4\,y^2$.

1) 5.56845

2) 17.393

3) 26.2499

4) 13.9918

5) 4.87031

Exercise 3

Compute $\int_D (y + z^3)\,dx\,dy\,dz$ for $D =$
$\{3\,y^4 \le x^3\,z^6 \le 11\,y^4,\ 3\,x^4 \le y^6\,z^5 \le 12\,x^4,\ 6\,x^8 \le y^9\,z^6 \le 12\,x^8,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.720397

2) −0.620397

3) −0.0203971

4) 0.279603

5) 0.0796029

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 70

Exercise 1

Compute $\int_D (4\,y^2)\,dx\,dy$ for $D=\left\{2\,y^2 \le x \le 6\,y^2,\ 5\,x^3 \le y^7 \le 11\,x^3,\ x>0,\ y>0\right\}$

1) $-4.$

2) -1.55934×10^{16}

3) 4.45527×10^{15}

4) 2.89592×10^{16}

5) 2.22763×10^{16}

Exercise 2

Compute the volume of the domain limited by the plane $2\,x+8\,z=2$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 0.11886

2) 0.0718109

3) 0.0764263

4) 0.092675

5) 0.0253167

Exercise 3

Compute $\int_D (4\,z)\,dx\,dy\,dz$ for $D=\left\{x^7 \le z^2 \le 4\,x^7,\ 9\,x \le y^4\,z^2 \le 18\,x,\ 6 \le x^9\,y^5\,z^9 \le 9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.00953877

2) 1.10954

3) -0.890461

4) -0.0904612

5) -0.290461

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 71

Exercise 1

Compute $\int_D (x^2 + y)\,dx\,dy$ for $D = \left\{3\,x^{11}\,y^4 \le 1 \le 4\,x^{11}\,y^4,\ x^8\,y^3 \le 1 \le 9\,x^8\,y^3,\ x > 0,\ y > 0\right\}$

1) $-83\,993.2$

2) $111\,991.$

3) $111\,991.$

4) $-27\,997.7$

5) $279\,977.$

Exercise 2

Compute the volume of the domain limited by the plane
$8\,x + 10\,z == 6$ and the paraboloid $z == 4\,x^2 + 4\,y^2$.

1) 0.16085

2) 0.191158

3) 0.135288

4) 0.258621

5) 0.594783

Exercise 3

Compute $\int_D (3\,y\,z)\,dx\,dy\,dz$ for $D =$
$\left\{7\,y^2\,z^2 \le x \le 9\,y^2\,z^2,\ 7\,y\,z^3 \le x^4 \le 10\,y\,z^3,\ 3\,x^8 \le y\,z^2 \le 8\,x^8,\ x > 0,\ y > 0,\ z > 0\right\}$

1) 0.000483746

2) 1.40048

3) -0.799516

4) 2.00048

5) 0.700484

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 72

Exercise 1

Compute $\int_D (x + 2y)\,dx\,dy$ for $D = \{8y^2 \le x^3 \le 14y^2,\ 6y^3 \le x^5 \le 12y^3,\ x > 0,\ y > 0\}$

1) 0.0000686083

2) 0.700069

3) 1.70007

4) −0.499931

5) −0.0999314

Exercise 2

Compute the volume of the domain limited by the plane $8x + 8z = 4$ and the paraboloid $z = 8x^2 + 8y^2$.

1) 0.257822

2) 0.054377

3) 0.0554151

4) 0.0825311

5) 0.146514

Exercise 3

Compute $\int_D (y^3 + z^3)\,dx\,dy\,dz$ for $D =$
$\{5z^4 \le x^6 y^4 \le 6z^4,\ z^2 \le x^8 y^4 \le 6z^2,\ 9y^3 \le x z^3 \le 13y^3,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.0000359778

2) 0.500036

3) 1.00004

4) −0.599964

5) −1.19996

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 73

Exercise 1

Compute $\int_D (3x+y)\,dx\,dy$ for $D=\{4y^2 \le x \le 11y^2,\ 3x^3 \le y^7 \le 8x^3,\ x>0,\ y>0\}$

1) 8.12317×10^{20}

2) 5.80226×10^{20}

3) 1.04441×10^{21}

4) -3.48136×10^{20}

5) -2.90113×10^{20}

Exercise 2

Compute the volume of the domain limited by the plane $8x+9z=3$ and the paraboloid $z=x^2+y^2$.

1) 0.316265

2) 0.442677

3) 1.38988

4) 0.235525

5) 1.95874

Exercise 3

Compute $\int_D (xy)\,dx\,dy\,dz$ for $D=\{2y^9 \le x^6z^7 \le 11y^9,\ x^2y \le z^7 \le 8x^2y,\ 9x^2z^4 \le y^6 \le 17x^2z^4,\ x>0,\ y>0,\ z>0\}$

1) 10.5039

2) 33.2623

3) 17.5065

4) 1.75065

5) -15.7558

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 74

Exercise 1

Compute $\int_D (x^2 + y^3)\,dx\,dy$ for $D = \{8\,y^{11} \le x^4 \le 12\,y^{11},\ 5\,y^8 \le x^3 \le 12\,y^8,\ x > 0,\ y > 0\}$

1) 8.0995×10^{12}

2) 3.52152×10^{12}

3) 4.22583×10^{12}

4) 1.05646×10^{13}

5) 1.76076×10^{12}

Exercise 2

Compute the volume of the domain limited by the plane $6\,x + z == 10$ and the paraboloid $z == 8\,x^2 + 8\,y^2$.

1) 24.3013

2) 109.321

3) 84.8837

4) 53.4669

5) 5.33137

Exercise 3

Compute $\int_D (3\,x + z)\,dx\,dy\,dz$ for $D =$
$\{3\,y^8\,z^2 \le x \le 4\,y^8\,z^2,\ 9\,y^7\,z^9 \le 1 \le 10\,y^7\,z^9,\ 8\,y^8 \le x^2\,z^8 \le 9\,y^8,\ x > 0,\ y > 0,\ z > 0\}$

1) 4.35075×10^{-9}

2) 1.5

3) −0.6

4) −1.9

5) −0.7

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 75

Exercise 1

Compute $\int_D (x^3\, y^3)\, dx dy$ for $D = \{6 \le x^4\, y^5 \le 13,\ 3 \le x^3\, y^4 \le 11,\ x > 0,\ y > 0\}$

1) 50.2114

2) 20.9214

3) −18.8293

4) −18.8293

5) 35.5664

Exercise 2

Compute the volume of the domain limited by the plane $4\,x + 4\,z == 9$ and the paraboloid $z == 9\,x^2 + 9\,y^2$.

1) 4.20939

2) 0.403019

3) 2.38425

4) 0.905524

5) 1.43225

Exercise 3

Compute $\int_D (x + z^2)\, dx dy dz$ for $D =$
$\{z^5 \le x^3\, y^9 \le 5\, z^5,\ 5\, x^4 \le y^6\, z^9 \le 7\, x^4,\ 6\, x^4 \le y^3\, z^2 \le 9\, x^4,\ x > 0,\ y > 0,\ z > 0\}$

1) −0.199364

2) 0.600636

3) 0.900636

4) 0.00063632

5) −1.99936

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 76

Exercise 1

Compute $\int_D (x\,y)\,dx\,dy$ for $D=\left\{7\,x^5\,y^2 \le 1 \le 15\,x^5\,y^2,\ 4\,x^7\,y^3 \le 1 \le 6\,x^7\,y^3,\ x>0,\ y>0\right\}$

1) 32033.8

2) 11864.4

3) −9491.5

4) −11864.4

5) 10677.9

Exercise 2

Compute the volume of the domain limited by the plane $8\,x+8\,z=6$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 0.489474

2) 0.110231

3) 0.236693

4) 0.110824

5) 0.138532

Exercise 3

Compute $\int_D (x+z)\,dx\,dy\,dz$ for $D=\left\{3\,y \le x^4\,z^3 \le 7\,y,\ 9 \le x^8\,y^8\,z^7 \le 14,\ 5\,x^9 \le y^8\,z^9 \le 6\,x^9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.000402222

2) −0.399598

3) −1.0996

4) −0.699598

5) 0.700402

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 77

Exercise 1

Compute $\int_D (4\,x)\,dx\,dy$ for $D=\left\{2 \le x^3\,y^{13} \le 9,\ 5 \le x^8\,y^{35} \le 6,\ x>0,\ y>0\right\}$

1) -4.8357×10^{24}

2) -2.69867×10^{40}

3) 3.37334×10^{40}

4) 3.03601×10^{40}

5) -2.36134×10^{40}

Exercise 2

Compute the volume of the domain limited by the plane $3\,x+2\,z=7$ and the paraboloid $z=2\,x^2+2\,y^2$.

1) 44.0762

2) 11.2295

3) 16.4858

4) 2.62882

5) 1.16974

Exercise 3

Compute $\int_D (2\,x+x^3)\,dx\,dy\,dz$ for $D=$
$\left\{9\,x^5\,y^4 \le z^4 \le 10\,x^5\,y^4,\ x^7\,z^4 \le y^7 \le 4\,x^7\,z^4,\ 6\,y^9 \le x^9\,z^7 \le 11\,y^9,\ x>0,\ y>0,\ z>0\right\}$

1) -1.76019

2) 0.0398081

3) 0.939808

4) 0.139808

5) 1.23981

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 78

Exercise 1

Compute $\int_D (4\,y^2)\,dx\,dy$ for $D=\{9\,x^9 \le y^5 \le 17\,x^9,\ 8\,x^2 \le y \le 9\,x^2,\ x>0,\ y>0\}$

1) -1.8

2) 8.92986×10^{-23}

3) -1.9

4) $-2.$

5) -0.3

Exercise 2

Compute the volume of the domain limited by the plane
$8\,x+9\,z=5$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 0.0923139

2) 0.374816

3) 0.0749897

4) 0.0764736

5) 0.265892

Exercise 3

Compute $\int_D (5\,z)\,dx\,dy\,dz$ for $D=$
$\{5\,x^2\,y\,z^3 \le 1 \le 10\,x^2\,y\,z^3,\ 4\,x^4 \le y^4\,z \le 5\,x^4,\ 7\,x^6\,y^2 \le z^6 \le 12\,x^6\,y^2,\ x>0,\ y>0,\ z>0\}$

1) -0.999206

2) 0.600794

3) -1.69921

4) 1.90079

5) 0.000794196

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 79

Exercise 1

Compute $\int_D (x^2\, y)\, dx dy$ for $D = \{7\, x^{23} \le y^{63} \le 8\, x^{23},\ 5\, y^{11} \le x^4 \le 14\, y^{11},\ x > 0,\ y > 0\}$

1) -0.1

2) $1.$

3) 1.28042×10^{-203}

4) $-2.$

5) -1.9

Exercise 2

Compute the volume of the domain limited by the plane $5\, x + z == 9$ and the paraboloid $z == 8\, x^2 + 8\, y^2$.

1) 18.7853

2) 47.6041

3) 4.83674

4) 79.9109

5) 91.6098

Exercise 3

Compute $\int_D (y + 2\, z)\, dx dy dz$ for $D =$
$\{x\, y^6\, z^2 \le 1 \le 6\, x\, y^6\, z^2,\ 3\, x^6 \le y^9\, z^2 \le 4\, x^6,\ 2\, y^9 \le x^4\, z^9 \le 6\, y^9,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.90259

2) 1.80259

3) 1.80259

4) 1.50259

5) 0.00259438

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 80

Exercise 1

Compute $\int_D (2\,y^3)\,dx\,dy$ for $D=\left\{4 \le x^{13}\,y^{43} \le 6,\ x^{23}\,y^{76} \le 1 \le 6\,x^{23}\,y^{76},\ x>0,\ y>0\right\}$

1) -2.75985×10^{17}

2) 3.94264×10^{17}

3) 3.54838×10^{17}

4) -2.75985×10^{17}

5) -3.94264×10^{16}

Exercise 2

Compute the volume of the domain limited by the plane
$4\,x+7\,z=3$ and the paraboloid $z=8\,x^2+8\,y^2$.

1) 0.101801

2) 0.101901

3) 0.0968931

4) 0.03786

5) 0.037802

Exercise 3

Compute $\int_D (x^3+z^3)\,dx\,dy\,dz$ for $D=$
$\left\{2\,x^3\,y^5 \le z^4 \le 8\,x^3\,y^5,\ y^2 \le x^6\,z^5 \le 5\,y^2,\ 6\,x^3\,y^2\,z^9 \le 1 \le 7\,x^3\,y^2\,z^9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.901235

2) 0.00123489

3) -1.19877

4) 1.20123

5) -1.69877

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 81

Exercise 1

Compute $\int_D (x^4)\,dx\,dy$ for $D=\left\{8\,y^5 \le x \le 10\,y^5,\ 6\,y^{19} \le x^4 \le 15\,y^{19},\ x>0,\ y>0\right\}$

1) -1.6

2) -1.7

3) 5.77904×10^{-63}

4) 0.1

5) $-1.$

Exercise 2

Compute the volume of the domain limited by the plane $10\,x+9\,z==3$ and the paraboloid $z==9\,x^2+9\,y^2$.

1) 0.0395998

2) 0.023588

3) 0.0980918

4) 0.0697516

5) 0.0976737

Exercise 3

Compute $\int_D (z+z^2)\,dx\,dy\,dz$ for $D=$
$\left\{6\,y^7 \le x^3\,z^7 \le 11\,y^7,\ x^4 \le y^8\,z^4 \le 10\,x^4,\ 6\,x^9\,z^9 \le y^9 \le 14\,x^9\,z^9,\ x>0,\ y>0,\ z>0\right\}$

1) -1.69743

2) -1.09743

3) -1.19743

4) 0.00256883

5) 0.302569

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 82

Exercise 1

Compute $\int_D (x^2)\,dx\,dy$ for $D=\left\{3x^5y^3 \le 1 \le 8x^5y^3,\ 7x^{23}y^{14} \le 1 \le 9x^{23}y^{14},\ x>0,\ y>0\right\}$

1) 1.6

2) 0.3

3) −0.2

4) −0.1

5) 4.70951×10^{-8}

Exercise 2

Compute the volume of the domain limited by the plane $10x+7z=6$ and the paraboloid $z=9x^2+9y^2$.

1) 0.145751

2) 0.380078

3) 0.579106

4) 0.110751

5) 0.103242

Exercise 3

Compute $\int_D (3xz)\,dx\,dy\,dz$ for $D=$
$\left\{z^7 \le x^9y^7 \le 4z^7,\ 9xz \le y^2 \le 15xz,\ 6yz^8 \le x^7 \le 15yz^8,\ x>0,\ y>0,\ z>0\right\}$

1) −0.199773

2) 0.600227

3) 0.700227

4) 1.20023

5) 0.000226675

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 83

Exercise 1

Compute $\int_D (6\,y)\,dx\,dy$ for $D=\{4 \le x\,y \le 12,\ 3 \le x\,y^2 \le 4,\ x>0,\ y>0\}$

1) 15.1608

2) −1.31833

3) 15.1608

4) 6.59167

5) −5.93251

Exercise 2

Compute the volume of the domain limited by the plane $4\,x+3\,z==1$ and the paraboloid $z==3\,x^2+3\,y^2$.

1) 0.101411

2) 0.588729

3) 0.102337

4) 0.520337

5) 0.121383

Exercise 3

Compute $\int_D (x+y)\,dx\,dy\,dz$ for $D=$
$\{3\,x^2 \le y^7\,z^7 \le 7\,x^2,\ 3\,x^7\,y^7\,z^6 \le 1 \le 8\,x^7\,y^7\,z^6,\ 8\,x^3\,y^2 \le z^2 \le 13\,x^3\,y^2,\ x>0,\ y>0,\ z>0\}$

1) 0.00224703

2) −1.79775

3) 1.50225

4) 1.20225

5) −1.99775

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 84

Exercise 1

Compute $\int_D (2\,y)\,dx\,dy$ for $D=\left\{4\,y^3 \le x \le 9\,y^3,\ 2\,y^2 \le x \le 7\,y^2,\ x>0,\ y>0\right\}$

1) -1.25941

2) 5.03765

3) -4.40794

4) 6.29706

5) 18.8912

Exercise 2

Compute the volume of the domain limited by the plane $9\,x+3\,z=6$ and the paraboloid $z=4\,x^2+4\,y^2$.

1) 7.06446

2) 2.57862

3) 0.84911

4) 2.07429

5) 10.2445

Exercise 3

Compute $\int_D (x+z^3)\,dx\,dy\,dz$ for $D=$
$\left\{x^6\,y^8\,z^4 \le 1 \le 7\,x^6\,y^8\,z^4,\ 6\,x^2\,z^3 \le y^4 \le 8\,x^2\,z^3,\ 9\,x^7 \le y^9\,z^4 \le 13\,x^7,\ x>0,\ y>0,\ z>0\right\}$

1) 0.000367574

2) 1.20037

3) -1.89963

4) 1.40037

5) -1.09963

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 85

Exercise 1

Compute $\int_D (x^2\, y^3)\, dx dy$ for $D = \{6\, y^2 \le x \le 10\, y^2,\ 4\, x^2 \le y^5 \le 8\, x^2,\ x > 0,\ y > 0\}$

1) -1.86554×10^{29}

2) 1.25924×10^{30}

3) -2.33192×10^{29}

4) 4.66385×10^{29}

5) 8.86131×10^{29}

Exercise 2

Compute the volume of the domain limited by the plane
$2\, x + 10\, z == 8$ and the paraboloid $z == 7\, x^2 + 7\, y^2$.

1) 0.129324

2) 0.406095

3) 0.144129

4) 0.105586

5) 0.128422

Exercise 3

Compute $\int_D (3\, y^2)\, dx dy dz$ for $D =$
$\{8\, x^3\, z^3 \le y^2 \le 10\, x^3\, z^3,\ 5\, x^9 \le y^6 \le 7\, x^9,\ 4\, y^2 \le z^2 \le 12\, y^2,\ x > 0,\ y > 0,\ z > 0\}$

1) -1.79999

2) 0.800011

3) 0.800011

4) -0.199989

5) 0.0000106638

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 86

Exercise 1

Compute $\int_D (2x + y^3)\,dx\,dy$ for $D = \{5x \le y \le 11x,\ 6x^2 \le y \le 8x^2,\ x > 0,\ y > 0\}$

1) 5141.44

2) 14 396.

3) 10 282.9

4) −514.144

5) 9254.6

Exercise 2

Compute the volume of the domain limited by the plane $6x + 10z = 2$ and the paraboloid $z = 7x^2 + 7y^2$.

1) 0.014347

2) 0.00926392

3) 0.0167907

4) 0.0101671

5) 0.0430792

Exercise 3

Compute $\int_D (x + z^3)\,dx\,dy\,dz$ for $D =$
$\{2x \le y^7 z^6 \le 5x,\ 2x^7 \le y^2 z^5 \le 9x^7,\ 6x^7 z^6 \le y \le 10x^7 z^6,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.30222

2) 0.00221509

3) 1.70222

4) 0.902215

5) 1.80222

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 87

Exercise 1

Compute $\int_D (3y + y^3)\,dx\,dy$ for $D = \{1 \le x^4 y \le 5,\ 9 \le x^7 y^2 \le 17,\ x > 0,\ y > 0\}$

1) 7.33902×10^{15}

2) -2.20171×10^{15}

3) $-1.$

4) 1.76136×10^{16}

5) 5.87121×10^{15}

Exercise 2

Compute the volume of the domain limited by the plane $6x + 3z == 8$ and the paraboloid $z == 6x^2 + 6y^2$.

1) 2.10167

2) 4.37692

3) 1.8038

4) 0.904824

5) 2.74685

Exercise 3

Compute $\int_D (x + y^3)\,dx\,dy\,dz$ for $D =$
$\{7 \le x y^2 z^4 \le 9,\ x^9 z^7 \le y^4 \le 10 x^9 z^7,\ 2 x^9 y^2 z^7 \le 1 \le 6 x^9 y^2 z^7,\ x > 0,\ y > 0,\ z > 0\}$

1) 0.705791

2) 0.00579069

3) 1.30579

4) -1.19421

5) 1.60579

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 88

Exercise 1

Compute $\int_D (3\,x^2\,y)\,dx\,dy$ for $D=\{2 \le x^4\,y^3 \le 8,\ 9 \le x^{13}\,y^{10} \le 13,\ x>0,\ y>0\}$

1) 94.1538

2) 261.538

3) 104.615

4) 219.692

5) 282.462

Exercise 2

Compute the volume of the domain limited by the plane $3\,x+7\,z==2$ and the paraboloid $z==2\,x^2+2\,y^2$.

1) 0.292989

2) 0.123872

3) 0.0782252

4) 0.0748322

5) 0.0899386

Exercise 3

Compute $\int_D (x^2\,z)\,dx\,dy\,dz$ for $D=$
$\{6\,x^5\,y \le z^8 \le 12\,x^5\,y,\ 6 \le y^8\,z^3 \le 13,\ 9\,y^5 \le x^4\,z \le 12\,y^5,\ x>0,\ y>0,\ z>0\}$

1) 1.60627

2) −1.09373

3) 0.306272

4) 1.00627

5) 0.00627247

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 89

Exercise 1

Compute $\int_D (4\,y)\,dx\,dy$ for $D=\{3 \le x^3\,y^2 \le 7,\ 8 \le x\,y \le 12,\ x>0,\ y>0\}$

1) -1267.81

2) 3169.52

3) -3169.52

4) 9191.62

5) -633.905

Exercise 2

Compute the volume of the domain limited by the plane $5\,x+8\,z=2$ and the paraboloid $z=9\,x^2+9\,y^2$.

1) 0.0362531

2) 0.0158938

3) 0.0118758

4) 0.0580093

5) 0.0432129

Exercise 3

Compute $\int_D (y^2)\,dx\,dy\,dz$ for $D=$

$\{5\,x\,z^7 \le y^4 \le 8\,x\,z^7,\ 3\,y^2\,z^2 \le x^7 \le 5\,y^2\,z^2,\ 2\,x\,z^5 \le 1 \le 7\,x\,z^5,\ x>0,\ y>0,\ z>0\}$

1) 0.00180072

2) -0.0981993

3) -0.598199

4) -1.0982

5) 0.501801

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 90

Exercise 1

Compute $\int_D (4\,y)\,dx\,dy$ for $D=\left\{3\,y^3 \le x \le 8\,y^3,\ 2\,x \le y^4 \le 10\,x,\ x>0,\ y>0\right\}$

1) 9.05949×10^9

2) 9.40793×10^9

3) -1.39377×10^9

4) 3.48442×10^9

5) 3.13598×10^9

Exercise 2

Compute the volume of the domain limited by the plane $8\,x+9\,z=8$ and the paraboloid $z=6\,x^2+6\,y^2$.

1) 0.311439

2) 0.269101

3) 0.22246

4) 0.116271

5) 0.10151

Exercise 3

Compute $\int_D (2\,x\,z)\,dx\,dy\,dz$ for $D=\left\{2 \le x^6\,y^5\,z^2 \le 9,\ 7\,y^8 \le x^5\,z^8 \le 16\,y^8,\ 3 \le x^9\,z^5 \le 9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.0692849

2) -0.0307151

3) -1.93072

4) 2.06928

5) 2.06928

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 91

Exercise 1

Compute $\int_D (2\,y)\,dx\,dy$ for $D=\left\{9 \le x^{10}\,y^{27} \le 16,\ 6 \le x^{27}\,y^{73} \le 9,\ x>0,\ y>0\right\}$

1) 6.11391×10^{15}

2) 1.52848×10^{15}

3) 1.06993×10^{16}

4) 1.06993×10^{16}

5) 3.82119×10^{15}

Exercise 2

Compute the volume of the domain limited by the plane $x+7\,z==7$ and the paraboloid $z==7\,x^2+7\,y^2$.

1) 0.55315

2) 0.790101

3) 0.224727

4) 0.168162

5) 0.100307

Exercise 3

Compute $\int_D (2\,x+z)\,dx\,dy\,dz$ for $D=$
$\left\{6\,x^8\,y^3 \le z^7 \le 8\,x^8\,y^3,\ 6\,x^9\,y^5\,z^3 \le 1 \le 12\,x^9\,y^5\,z^3,\ 4 \le x^3\,z^6 \le 5,\ x>0,\ y>0,\ z>0\right\}$

1) −1.29955

2) 0.700447

3) 1.70045

4) 0.000446653

5) −0.199553

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 92

Exercise 1

Compute $\int_D (2\,y)\,dx\,dy$ for $D=\{4 \le x^3\,y^{20} \le 8,\ 5 \le x\,y^7 \le 12,\ x>0,\ y>0\}$

1) -1.4

2) -0.3

3) 1.48597×10^{-7}

4) -1.1

5) -1.6

Exercise 2

Compute the volume of the domain limited by the plane $7\,x+5\,z=6$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 0.361934

2) 1.31112

3) 0.186368

4) 0.936943

5) 0.308729

Exercise 3

Compute $\int_D (x+y^2)\,dx\,dy\,dz$ for $D=$
$\{3\,x^7 \le y^3\,z^6 \le 5\,x^7,\ 5\,y^2 \le x^8\,z^9 \le 7\,y^2,\ 3\,x^3 \le y^6\,z^4 \le 5\,x^3,\ x>0,\ y>0,\ z>0\}$

1) 1.80054

2) -1.29946

3) -0.599459

4) -0.899459

5) 0.000541215

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 93

Exercise 1

Compute $\int_D (3\,x^2)\,dx\,dy$ for $D=\left\{3\,x^3 \le y^2 \le 4\,x^3,\ 8\,x^{17} \le y^{11} \le 11\,x^{17},\ x>0,\ y>0\right\}$

1) 1.247×10^{20}

2) 8.31331×10^{19}

3) 1.30638×10^{20}

4) 5.34427×10^{19}

5) 5.93808×10^{19}

Exercise 2

Compute the volume of the domain limited by the plane
$5\,x+4\,z=9$ and the paraboloid $z=2\,x^2+2\,y^2$.

1) 4.69633

2) 18.0795

3) 22.1484

4) 0.872405

5) 1.85229

Exercise 3

Compute $\int_D (y+z^2)\,dx\,dy\,dz$ for $D=$
$\left\{5 \le x^9\,y^8\,z^4 \le 9,\ 9\,x^9 \le y^2\,z^5 \le 13\,x^9,\ 2\,z^9 \le x^9\,y^2 \le 7\,z^9,\ x>0,\ y>0,\ z>0\right\}$

1) -1.09884

2) -1.79884

3) 1.20116

4) 1.30116

5) 0.00115721

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 94

Exercise 1

Compute $\int_D (2\,x^3)\,dx\,dy$ for $D=\left\{8\,y^5 \le x \le 13\,y^5,\ 4\,x^3 \le y^{16} \le 9\,x^3,\ x>0,\ y>0\right\}$

1) 7.36929×10^{91}

2) 6.69936×10^{91}

3) 1.74183×10^{92}

4) 1.27288×10^{92}

5) 1.67484×10^{92}

Exercise 2

Compute the volume of the domain limited by the plane $6\,x+z==5$ and the paraboloid $z==3\,x^2+3\,y^2$.

1) 37.6226

2) 0.171275

3) 33.5103

4) 0.337141

5) 98.6023

Exercise 3

Compute $\int_D (2\,z^4)\,dx\,dy\,dz$ for $D=$
$\left\{2\,y^7 \le x\,z^9 \le 6\,y^7,\ 2\,x^7\,y^9\,z \le 1 \le 8\,x^7\,y^9\,z,\ x^7 \le y^7\,z \le 5\,x^7,\ x>0,\ y>0,\ z>0\right\}$

1) 0.106613

2) −1.99339

3) −0.193387

4) 1.70661

5) 0.00661335

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 95

Exercise 1

Compute $\int_D (x^2 + 2y)\,dx\,dy$ for $D = \{6 \le x^3 y \le 13,\ 2 \le x^2 y \le 6,\ x > 0,\ y > 0\}$

1) 12.0006

2) 10.8005

3) 10.8005

4) 9.60045

5) 18.0008

Exercise 2

Compute the volume of the domain limited by the plane $4x + 6z = 8$ and the paraboloid $z = x^2 + y^2$.

1) 6.16045

2) 13.8691

3) 3.27734

4) 2.82383

5) 12.7134

Exercise 3

Compute $\int_D (x + y^2)\,dx\,dy\,dz$ for $D =$

$\{7x^3 y^9 \le z^9 \le 11x^3 y^9,\ 3y^8 z^5 \le x^7 \le 7y^8 z^5,\ 6x^9 y^9 z^6 \le 1 \le 8x^9 y^9 z^6,\ x > 0,\ y > 0,\ z > 0\}$

1) 1.40007

2) 0.600073

3) 1.30007

4) −1.69993

5) 0.0000729762

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 96

Exercise 1

Compute $\int_D (2\,x\,y)\,dx\,dy$ for $D=\left\{y \le x^4 \le 7\,y,\ 6\,x^3 \le y \le 7\,x^3,\ x>0,\ y>0\right\}$

1) 3.19959×10^{13}

2) 6.07923×10^{13}

3) 2.55968×10^{13}

4) 1.27984×10^{13}

5) 4.79939×10^{13}

Exercise 2

Compute the volume of the domain limited by the plane $x+3\,z=3$ and the paraboloid $z=9\,x^2+9\,y^2$.

1) 0.145509

2) 0.107691

3) 0.175612

4) 0.207252

5) 0.766159

Exercise 3

Compute $\int_D (3\,x\,y)\,dx\,dy\,dz$ for $D=$
$\left\{3\,x^8 \le y^7\,z \le 8\,x^8,\ 5\,x^8\,y^8 \le z \le 10\,x^8\,y^8,\ 4\,x^9 \le y^8\,z^8 \le 6\,x^9,\ x>0,\ y>0,\ z>0\right\}$

1) 0.000595113

2) 2.0006

3) −0.299405

4) 1.3006

5) 0.600595

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 97

Exercise 1

Compute $\int_D (2\,x\,y^3)\,dx\,dy$ for $D=\left\{4\,x^{21}\le y^{37}\le 8\,x^{21},\ 5\,x^4\le y^7\le 14\,x^4,\ x>0,\ y>0\right\}$

1) 1.90849×10^{-87}

2) $-1.$

3) -0.7

4) -1.3

5) -0.9

Exercise 2

Compute the volume of the domain limited by the plane $7\,x+8\,z=7$ and the paraboloid $z=7\,x^2+7\,y^2$.

1) 0.716077

2) 0.152311

3) 0.113002

4) 0.511689

5) 0.182711

Exercise 3

Compute $\int_D (2\,x\,y)\,dx\,dy\,dz$ for $D=$
$\left\{x\,z^7\le 1\le 5\,x\,z^7,\ 2\,y^3\,z^7\le x^3\le 9\,y^3\,z^7,\ 4\,y^3\,z^3\le x^7\le 5\,y^3\,z^3,\ x>0,\ y>0,\ z>0\right\}$

1) -0.97109

2) -1.47109

3) -0.97109

4) 1.72891

5) 0.0289104

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 98

Exercise 1

Compute $\int_D (x\,y)\,dx\,dy$ for $D=\left\{4\,y^6 \le x^{37} \le 12\,y^6,\ 3\,x^{43} \le y^7 \le 12\,x^{43},\ x>0,\ y>0\right\}$

1) 4.96939×10^{196}

2) 8.69644×10^{196}

3) 2.4847×10^{196}

4) 1.30447×10^{197}

5) 6.21174×10^{196}

Exercise 2

Compute the volume of the domain limited by the plane $9\,x+3\,z=9$ and the paraboloid $z=9\,x^2+9\,y^2$.

1) 0.955092

2) 6.95324

3) 4.94224

4) 0.654404

5) 1.8435

Exercise 3

Compute $\int_D (2\,x^4)\,dx\,dy\,dz$ for $D=$
$\left\{9\,z^5 \le x^7\,y \le 13\,z^5,\ 6\,x\,z^2 \le y^7 \le 12\,x\,z^2,\ 3\,z^7 \le x^9\,y \le 9\,z^7,\ x>0,\ y>0,\ z>0\right\}$

1) 18 783.6

2) 14 870.3

3) 18 000.9

4) 7826.49

5) 18 000.9

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 99

Exercise 1

Compute $\int_D (y + y^3)\, dx dy$ for $D = \{4 \le x^5 y \le 6,\ 7 x^{11} y^2 \le 1 \le 10 x^{11} y^2,\ x > 0,\ y > 0\}$

1) 2.40943×10^{48}

2) 6.02357×10^{48}

3) 6.02357×10^{47}

4) -3.01179×10^{48}

5) -1.80707×10^{48}

Exercise 2

Compute the volume of the domain limited by the plane
$5 x + z == 8$ and the paraboloid $z == 3 x^2 + 3 y^2$.

1) 11.217

2) 17.4684

3) 74.0104

4) 53.2362

5) 12.877

Exercise 3

Compute $\int_D (3 z^2)\, dx dy dz$ for $D = \{8 y^9 \le z^6 \le 15 y^9,\ 8 \le x^9 y^3 z^2 \le 11,\ 4 x^7 y \le z^5 \le 9 x^7 y,\ x > 0,\ y > 0,\ z > 0\}$

1) -0.295305

2) 0.00469472

3) 1.60469

4) 1.10469

5) -1.99531

Further Mathematics - Degree in Engineering - 2024/2025
02-Multivariate integral-Computers exam for serial number: 100

Exercise 1

Compute $\int_D (6\,y^2)\,dx\,dy$ for $D=\left\{y^{13} \le x^{23} \le 4\,y^{13},\ 7\,y^9 \le x^{16} \le 11\,y^9,\ x>0,\ y>0\right\}$

1) 3.18173×10^{82}

2) -1.27269×10^{82}

3) 2.86355×10^{82}

4) -9.54518×10^{81}

5) 5.40893×10^{82}

Exercise 2

Compute the volume of the domain limited by the plane $6\,x+7\,z=10$ and the paraboloid $z=3\,x^2+3\,y^2$.

1) 1.28482

2) 0.590665

3) 1.00019

4) 5.48332

5) 1.16212

Exercise 3

Compute $\int_D (3\,x\,y)\,dx\,dy\,dz$ for $D=$
$\left\{7 \le x^2\,y^9\,z^2 \le 12,\ 3\,x^9\,y^6\,z^9 \le 1 \le 10\,x^9\,y^6\,z^9,\ 6\,y^3 \le x^3\,z^4 \le 14\,y^3,\ x>0,\ y>0,\ z>0\right\}$

1) 0.000248984

2) -1.19975

3) 1.80025

4) -0.799751

5) 0.900249