

A-Level Further Mathematics

Past-Paper Exercise Sheets — Question Index

24 subtopics • 141 questions • 1248 marks

1.1 Roots of polynomial equations

5 questions, 41 marks • calculation $x4$, short answer

Source	Q	Type	Marks
9231/11 N25	4	calculation	8
9231/12 N25	2	calculation	8
9231/14 N25	2	short answer	9
9231/11 J25	2	calculation	7
9231/13 J25	3	calculation	9

1.2 Rational functions and graphs

5 questions, 73 marks • short answer $x4$, calculation

Source	Q	Type	Marks
9231/11 N25	7	short answer	14
9231/12 N25	7	calculation	14
9231/14 N25	7	short answer	16
9231/11 J25	7	short answer	15
9231/13 J25	6	short answer	14

1.3 Summation of series

5 questions, 43 marks • calculation $x4$, short answer

Source	Q	Type	Marks
9231/11 N25	1	calculation	9
9231/12 N25	1	calculation	9
9231/14 N25	3	short answer	9
9231/11 J25	1	calculation	8
9231/13 J25	4	calculation	8

1.4 Matrices

4 questions, 41 marks • short answer $x3$, calculation

Source	Q	Type	Marks
9231/11 N25	2	short answer	11
9231/12 N25	4	short answer	10
9231/11 J25	4	short answer	9
9231/13 J25	1	calculation	11

1.5 Polar coordinates

5 questions, 68 marks • calculation x3, short answer x2

Source	Q	Type	Marks
9231/11 N25	6	calculation	15
9231/12 N25	5	short answer	12
9231/14 N25	6	calculation	12
9231/11 J25	5	short answer	13
9231/13 J25	7	calculation	16

1.6 Vectors

5 questions, 62 marks • calculation x5

Source	Q	Type	Marks
9231/11 N25	5	calculation	11
9231/12 N25	6	calculation	14
9231/14 N25	4	calculation	10
9231/11 J25	6	calculation	16
9231/13 J25	5	calculation	11

1.7 Proof by induction

5 questions, 33 marks • short answer x5

Source	Q	Type	Marks
9231/11 N25	3	short answer	7
9231/12 N25	3	short answer	8
9231/14 N25	1	short answer	5
9231/11 J25	3	short answer	7
9231/13 J25	2	short answer	6

2.1 Hyperbolic functions

5 questions, 50 marks • short answer x4, calculation

Source	Q	Type	Marks
9231/21 N25	7	short answer	12
9231/24 N25	2	calculation	6
9231/21 J25	6	short answer	15
9231/23 J25	2	short answer	8
9231/23 J25	3	short answer	9

2.2 Matrices

6 questions, 68 marks • calculation x5, short answer

Source	Q	Type	Marks
9231/21 N25	1	calculation	3
9231/21 N25	6	calculation	10
9231/22 N25	8	calculation	15
9231/24 N25	8	calculation	13
9231/21 J25	8	short answer	13
9231/23 J25	8	calculation	14

2.3 Differentiation

5 questions, 46 marks • calculation x3, short answer x2

Source	Q	Type	Marks
9231/21 N25	2	calculation	8
9231/22 N25	3	short answer	9
9231/22 N25	7	short answer	11
9231/24 N25	7	calculation	13
9231/23 J25	1	calculation	5

2.4 Integration

9 questions, 78 marks • short answer x7, calculation x2

Source	Q	Type	Marks
9231/21 N25	3	short answer	9
9231/21 N25	5	short answer	11
9231/22 N25	1	calculation	4
9231/22 N25	6	calculation	13
9231/24 N25	1	short answer	5
9231/24 N25	4	short answer	10
9231/21 J25	2	short answer	7
9231/21 J25	4	short answer	9
9231/23 J25	6	short answer	10

2.5 Complex numbers

7 questions, 54 marks • short answer x5, calculation x2

Source	Q	Type	Marks
9231/21 N25	8	short answer	12
9231/22 N25	2	calculation	5
9231/22 N25	4	short answer	8
9231/24 N25	3	short answer	8
9231/21 J25	1	calculation	5
9231/21 J25	3	short answer	6
9231/23 J25	5	short answer	10

2.6 Differential equations

9 questions, 91 marks • calculation x8, short answer

Source	Q	Type	Marks
9231/21 N25	4	calculation	10
9231/21 N25	7	short answer	12
9231/22 N25	5	calculation	10
9231/24 N25	5	calculation	10
9231/24 N25	6	calculation	10
9231/21 J25	5	calculation	10
9231/21 J25	7	calculation	10
9231/23 J25	4	calculation	10
9231/23 J25	7	calculation	9

3.1 Motion of a projectile

5 questions, 42 marks • short answer x3, calculation x2

Source	Q	Type	Marks
9231/31 N25	7	calculation	12
9231/32 N25	4	short answer	7
9231/34 N25	2	short answer	6
9231/31 J25	2	calculation	6
9231/33 J25	7	short answer	11

3.2 Equilibrium of a rigid body

5 questions, 33 marks • calculation x4, short answer

Source	Q	Type	Marks
9231/31 N25	5	calculation	9
9231/32 N25	3	calculation	6
9231/34 N25	3	short answer	7
9231/31 J25	4	calculation	7
9231/33 J25	4	calculation	4

3.3 Circular motion

10 questions, 65 marks • calculation $\times 8$, short answer $\times 2$

Source	Q	Type	Marks
9231/31 N25	2	calculation	4
9231/31 N25	6	calculation	8
9231/32 N25	1	calculation	4
9231/32 N25	6	calculation	8
9231/34 N25	1	calculation	5
9231/34 N25	4	short answer	8
9231/31 J25	3	short answer	7
9231/31 J25	7	calculation	10
9231/33 J25	1	calculation	3
9231/33 J25	5	calculation	8

3.4 Hooke's law

5 questions, 35 marks • calculation $\times 4$, short answer

Source	Q	Type	Marks
9231/31 N25	4	calculation	6
9231/32 N25	2	calculation	6
9231/34 N25	6	short answer	9
9231/31 J25	5	calculation	6
9231/33 J25	2	calculation	8

3.5 Linear motion under a variable force

5 questions, 39 marks • calculation $\times 4$, short answer

Source	Q	Type	Marks
9231/31 N25	3	calculation	7
9231/32 N25	7	calculation	10
9231/34 N25	5	calculation	9
9231/31 J25	1	calculation	5
9231/33 J25	3	short answer	8

3.6 Momentum

5 questions, 36 marks • calculation $\times 4$, short answer

Source	Q	Type	Marks
9231/31 N25	1	calculation	4
9231/32 N25	5	calculation	9
9231/34 N25	7	calculation	6
9231/31 J25	6	short answer	9
9231/33 J25	6	calculation	8

4.1 Continuous random variables

5 questions, 52 marks • calculation x5

Source	Q	Type	Marks
9231/41 N25	5	calculation	10
9231/42 N25	4	calculation	10
9231/44 N25	2	calculation	10
9231/41 J25	2	calculation	12
9231/43 J25	3	calculation	10

4.2 Inference using normal and t-distributions

11 questions, 80 marks • calculation x10, short answer

Source	Q	Type	Marks
9231/41 N25	1	calculation	6
9231/41 N25	3	calculation	4
9231/41 N25	6	short answer	9
9231/42 N25	2	calculation	7
9231/42 N25	5	calculation	9
9231/44 N25	1	calculation	6
9231/44 N25	3	calculation	10
9231/41 J25	1	calculation	7
9231/41 J25	4	calculation	7
9231/43 J25	2	calculation	7
9231/43 J25	5	calculation	8

4.3 Chi-squared tests

5 questions, 35 marks • calculation x5

Source	Q	Type	Marks
9231/41 N25	2	calculation	6
9231/42 N25	3	calculation	8
9231/44 N25	5	calculation	7
9231/41 J25	3	calculation	8
9231/43 J25	1	calculation	6

4.4 Non-parametric tests

5 questions, 36 marks • calculation x4, short answer

Source	Q	Type	Marks
9231/41 N25	4	calculation	5
9231/42 N25	1	short answer	6
9231/44 N25	6	calculation	7
9231/41 J25	5	calculation	10
9231/43 J25	4	calculation	8

4.5 Probability generating functions

5 questions, 47 marks • calculation x3, short answer x2

Source	Q	Type	Marks
9231/41 N25	7	short answer	10
9231/42 N25	6	calculation	10
9231/44 N25	4	calculation	10
9231/41 J25	6	short answer	6
9231/43 J25	6	calculation	11