

Year 12 AS Further Maths Pure

Lesson Group	Specification coverage	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Pre- Test	Post -Test
A: Complex numbers I B: Complex	2.1 - 2.3 2.4 - 2.7	Manipulation of complex numbers Argand	Complex conjugates Modulus and	Roots of quadratic equations Manipulation of	Solving cubic and quadratic equations Loci in the	Solving quartic equations Finding the	A B	AB
numbers ll		diagrams	argument form	complex numbers in modulus argument form	argand diagram	cartesian equation of a locus		
C: Roots of polynomials	4.1, 4.2	Roots of quadratic equations	Roots of cubic equations	Roots of quartic equations	Expressions relating to the roots of a polynomial	Linear transformation of roots	С	C
D: Matrices	3.1 - 3.8	Matrix manipulation, determinant and inverse matrices	Transformations , and successive transformations using matrices	Singular, non- singular matrices and inverse matrices	Solutions of 3 linear simultaneous equations using matrices	Geometric interpretation of the solutions of 3 linear simultaneous equations using matrices	D	D
E: Proof by induction	1.1	Constructing proofs using mathematical induction	Summation of series	Divisibility	Matrices	-	E	E
F: Vectors	6.1 - 6.5	Cartesian and vector form of a straight line and planes in 3D	Scalar products and finding angles between lines and planes	Scalar product form of the equation of a plane	Determining whether lines meet and the point of intersection	Calculating the perpendicular distance between two lines, a point and a line and a point and a plane	F	F

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	coverage						Test	-Test
A: Complex numbers	2.8 - 2.11	De Moivre's theorem	Trigonometric identities	Sums of series	n th root of a complex number	Solving geometric problems	Α	A
B: Series	4.4 - 4.6	The method of differences	Higher derivatives	The Maclaurin expansion	Series expansion of compound functions	Validity of expansions	В	В
C: Methods in calculus	5.2 - 5.6	Integrate improper integrals	The mean value of a function	Integration using partial fractions	Differentiate inverse trigonometric functions	Integrating functions in the form $(a^2 - x^2)^{1/2}$ and $(a^2 - x^2)^{-1}$	С	C
D: Volumes of revolution	5.1	Volumes of revolution around the x axis	Volumes of revolution around the y axis	Volumes of revolution of parametrically defined curves	Modelling with volumes of revolution	-	D	D
E: Hyperbolic functions	8.1 - 8.5	Definitions of hyperbolic functions	Differentiation and integration of hyperbolic functions	Inverse hyperbolic functions	Logarithmic form of hyperbolic functions	Integration in the $(a^2 + x^2)$ - ^{1/2} and $(a^2 - x^2)$ - ^{1/2} by substitution	E	E
F: Differential equations	9.1 – 9.9	Finding and using the integrating factor	Solutions to 2 nd order differential equations in the form y" + y' + by = 0	Solutions to 2^{nd} order differential equations in the form y" + y' + by = f(x)	Solving harmonic motion and modelling damped oscillations using 2 nd order differential equations	Solving first order coupled differential equations	F	F

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