

PURE Schedule - Each topic has 3 links which is a mixture of worksheets and videos.

Week	Dates	Topic	Skills	Links		
Week 1	19 Jan – 25 Jan	Basic Integration	$\int x^n (n \neq -1)$ $\int e^{kx}$ , $\int \sin(kx)$ , $\int \cos(kx)$ +C & simple definite	PMT	AJMaths	Mathsgenie
		Logs	Laws combine/split Change of base Solve $a^{kx}=b$	PMT	AJMaths	Mathsgenie
Week 2	26 Jan – 01 Feb	Binomial Expansion	Use nCr/Pascal Expand $(a+bx)^n$ General term & validity	PMT	AJMaths	Mathsgenie
		Surds	Simplify & rationalise Conjugates Indices laws	PMT	AJMaths	Mathsgenie
Week 3	02 Feb – 08 Feb	Quadratics	Complete the square and Discriminant Roots & graphs Modelling	PMT	AJMaths	Mathsgenie
		Vectors 2D	$i-j$ & magnitude Parallel/perpendicular Position vectors	PMT	AJMaths	Mathsgenie
Week 4	09 Feb – 15 Feb	Circles	Centre/radius via completing square Tangent $\perp$ radius Coordinate properties	PMT	AJMaths	Mathsgenie
		Proof	Deduction/exhaustion Counterexample x Structure & notation	PMT	AJMaths	Mathsgenie
Week 5	16 Feb – 22 Feb	Straight Line graphs	$y=mx+c$ Parallel & Perpendicular Modelling	PMT	AJMaths	Mathsgenie
		Algebraic Methods	Algebraic Fraction Division of polynomials Factor Theorem	PMT	AJMaths	Mathsgenie
Week 6	23 Feb – 01 Mar	Modulus Functions	Sketch $y= f(x) $ Solve $ \dots = \dots $ Graph transformations	PMT	AJMaths	Mathsgenie
		Small Angle Approximations	$\sin\theta \approx \theta$ , $\cos\theta \approx 1-\theta^2/2$ , $\tan\theta \approx \theta$ Use in simplifications Error bounds	PMT	AJMaths	Mathsgenie
Week 7	02 Mar – 08 Mar	Functions & Inverses	Domain/range Composite fg Inverse & reflection	PMT	AJMaths	Mathsgenie
		Vectors 3D	$i-j-k$ Dot/angle Lines & direction	PMT	AJMaths	Mathsgenie
Week 8	09 Mar – 15 Mar	Partial Fractions	Distinct linear Repeated factors Improper $\rightarrow$ division	PMT	AJMaths	Mathsgenie
		Roots of Functions	Change of sign Locate interval Failure cases	PMT	AJMaths	Mathsgenie
Week 9	16 Mar – 22 Mar	Implicit Differentiation	Differentiate $F(x,y)=0$ Solve for $dy/dx$ Tangents/normals	PMT	AJMaths	Mathsgenie
		Trig Modelling	$a \cos\theta + b \sin\theta \rightarrow R \cos(\theta - \alpha)$ Solve in interval Interpret	PMT	AJMaths	Mathsgenie
Week 10	23 Mar – 29 Mar	Trig Identities	Pythagorean & reciprocals Double/Addition Prove identities	PMT	AJMaths	Mathsgenie
		Trapezium Rule	Apply formula Over/under-estimate More strips	PMT	AJMaths	Mathsgenie

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Week 11	30 Mar – 05 Apr	Geometric Sequences	Define $r$ & $u_n$ Use $S_n$ Use $S_\infty$ ( $ r  < 1$ )	PMT	AJMaths	Mathsgenie
		Differentiation	Chain rule & Product rule Quotient Rule Trigonometric differentiation	PMT	AJMaths	Mathsgenie
Week 12	06 Apr – 12 Apr	Integrating standard functions	Integrate $e^{kx}$ , $1/x$ , Integrate $\sin kx$ , $\cos kx$ Related sums, differences and constant multiples	PMT	AJMaths	Mathsgenie
		Graph Transformations	Simple transformations on the graph of $y = f(x)$ Sketching graphs: $y = af(x)$ , $y = f(x) + a$ , $y = f(x + a)$ , $y = f(ax)$	PMT	AJMaths	Mathsgenie
Week 13	13 Apr – 19 Apr	Integrating using trig identities	Use trig identities	PMT	AJMaths	Mathsgenie
		Differentiation from first principles	First principles to differentiate $x^n$ , Sin and Cos $\lim_{h \rightarrow 0} \left( \frac{(x+h)^n - x^n}{h} \right)$	PMT	AJMaths	Mathsgenie
Week 14	20 Apr – 26 Apr	Proof by Contradiction	Assume negation Derive contradiction Conclude	PMT	AJMaths	Mathsgenie
		Arithmetic Sequences	Define $a$ , $d$ and $u_n$ Use $S_n$ Modelling with series	PMT	AJMaths	Mathsgenie
Week 15	27 Apr – 03 May	Parametric Differentiation	$dx/dt$ , $dy/dt$ $dy/dx$ via chain rule Tangents/normals	PMT	AJMaths	Mathsgenie
		Sectors	$s=r\theta$ , $A=\frac{1}{2}r^2\theta$ Radians Segments	PMT	AJMaths	Mathsgenie
Week 16	04 May - 10 May	Integration by Substitution	Choose $u$ Change limits Recognise $ff'/f$	PMT	AJMaths	Mathsgenie
		Recurrence Relations	Generate terms Monotonic/periodic Fixed points	PMT	AJMaths	Mathsgenie
Week 17	11 May - 17 May	Integration by Parts	LIATE choice Multiple parts Typical products	PMT	AJMaths	Mathsgenie
		Newton–Raphson & Iteration	$x_{n+1} = x_n - f/f'$ Convergence/divergence Cobweb/staircase	PMT	AJMaths	Mathsgenie
Week 18	18 May - 24 May	Parametric Integration	Sub $x(t)$ , $y(t)$ Areas/arc Parametric limits	PMT	AJMaths	Mathsgenie
		Differential Equations	Separation of variables Integrate & +C Initial conditions	PMT	AJMaths	Mathsgenie