Key Maths phrases, explanations and Formula

Algebra (C1 and C2)

SHOW THAT:	starting with the information you are given, show all the steps of working until you get to the answer
Find equation of a line	write in form $y = mx + c$, with m gradient and c intercept or use $y - y_1 = m(x - x_1)$ with (x_1, y_1) a point on the line
Perpendicular line	gradient is $-\frac{1}{m}$
Intersects the x-axis:	make y = 0
Intersects the y-axis:	make x = 0
Coordinates of intersection of lines:	solve the equations simultaneously
Give exact solutions:	leave as a surd and/or fraction (or in term of π or a log) **No decimal answers for exact solutions**
If x = 2 is a root, find the other roots:	divide the polynomial by $(x – 2)$
Prove no real roots:	Prove that the discriminant is negative ($b^2 – 4ac < 0$)
Prove it is a tangent:	Make the equations of the line and curve equal to form a new quadratic and show there is only 1 solution Or show discriminant is zero ($b^2 – 4ac = 0$)
Distance between 2 points	Make a right angled triangle and use Pythagoras
Prove 2 lines don't intersect	Must be parallel – same gradient
Prove line and curve don't intersect	Solve simultaneously E.g. Make the equations of the line and curve equal to form a new quadratic – show there is no solution Or show discriminant is negative
Turning point/Stationary point	Solve when $dy/dx = 0$
Determine Nature of turning point	Decide whether a maximum, minimum or inflection point by using $\frac{d^2y}{dx^2}$ If < 0 →Max, If > 0 →Min, if =0 then need to compare dy/dx for x -values either side of turning point
Increasing function	When $dy/dx > 0$
Area of a Triangle	Either ½ x base x height OR ½ x a x b x sin C
Area of a Sector	½ r^2 θ (where θ is in radians)
Arc Length	S = rθ (where θ is in radians)
Calculate gradient at a point	Substitute x into dy/dx
Calculate the area under a curve	Use integration between two limits