

Algebra and graphs



Quadratic formula,

$$ax^2 + bx + c = 0 \quad \text{B} \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Completing the square

$$x^2 + bx + c = \left(x + \frac{b}{2}\right)^2 - \frac{b^2}{4} + c$$

Difference of two squares

$$a^2 - b^2 = (a + b)(a - b)$$

Linear sequence, n th term

$$u_n = a + (n - 1)d$$

Exponential sequence

$$u_n = ar^{n-1}$$

Proportion

$$y \propto x^n \Rightarrow y = kx^n; \quad y \propto \frac{1}{x^n} \Rightarrow y = \frac{k}{x^n}$$

Functions

$$fg(x) = f(g(x)); \quad f^{-1}: \text{swap } x, y \text{ and rearrange}$$

Gradient from two points

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

B given in the exam. Learn the rest.