

All graphs should be sketched in PENCIL, using a ruler for the axes and any straight lines.

Asymptotes should be drawn as dotted lines

1 Sketch the following graphs, showing clearly the turning points, intercepts with the axes and asymptotes (if any).

(a) $y = -4 - 5x - 2x^2 + 3x^3$

(b) $y = 2x - \frac{8}{x}$

(c) $y = x + \frac{8}{x^2}$

2 A curve is given as $y = \frac{2x}{x^2 + 1}$.

(i) Find $\frac{dy}{dx}$ and determine the range of values of x for which the gradient of the curve $y = \frac{2x}{x^2 + 1}$ is positive.

(ii) Find the turning points and determine if each point is a maximum or a minimum point.

(iii) Sketch the curve $y = \frac{2x}{x^2 + 1}$.

3 A curve is given as $y = 2(x - 1)^3(x + 1)$.

(i) Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$.

(ii) Determine the turning points for the curve $y = 2(x - 1)^3(x + 1)$.

(iii) Sketch the curve $y = 2(x - 1)^3(x + 1)$.