

Maths Rules

Year 1 Stationary Points

Section A

1. A curve has equation $y = x^3 - x^2 - 5x + 4$.
Find the coordinates of the stationary points of the curve.
2. A curve has equation $f(x) = x^4 - 18x^2 + 1$.
Find the coordinates of the stationary points of the curve.
3. The curve $y = x^{-1} + px^{-2}$ has a stationary point when $x = 1$.
Find the value of p .
4. Find the coordinates of the stationary point on the curve with equation $y = \frac{1}{2}x^2 + 14x^{\frac{3}{2}} - 11x$.
5. The curve $y = \frac{q(x + x^2)}{x^4}$
 - (a) Find $\frac{dy}{dx}$ in terms of q .
The curve $y = \frac{q(x + x^2)}{x^4}$ has a stationary point when $x = -\frac{3}{2}$.
 - (b) Show that $q = 2$.

Section B

1. A curve has equation $f(x) = x^2 - ax + 2$. Find the coordinates of the stationary point of the curve. Give your answer in terms of a .
2. A curve has equation $f(x) = bx^2 + 3bx + 5$. Find the coordinates of the stationary point of the curve. Give your answer in terms of b .
3. A curve has equation $y = \frac{1}{x} - \frac{3}{x^3}$.
Find the coordinates of the stationary points of the curve.
4. Show that the curve $y = \sqrt{x} - \frac{1}{2\sqrt{x}}$ has no stationary points.
5. Find the exact value of the x -coordinate of the stationary point on the curve with equation $y = \frac{1}{\sqrt{x}} + \sqrt[3]{x}$.