

Sample Paper 2H Question 25

- 1 A particle moves along a straight line.
The fixed point O lies on this line.
The displacement of the particle from O at time t seconds, $t \geq 0$, is s metres, where

$$s = t^3 - 5t^2 - 8t + 3$$

Find the value of t for which the particle is instantaneously at rest.

(4 marks)

Sample Paper 1H Question 21

- 2 The curve with equation $y = 8x^2 + \frac{2}{x}$ has one stationary point.

Find the co-ordinates of this stationary point.
Show your working clearly.

(5 marks)

June 2018 Paper 2H Question 17

- 3 $y = x^3 - 2x^2 - 15x + 5$

(a) Find $\frac{dy}{dx}$ (2)

C is the curve with equation $y = x^3 - 2x^2 - 15x + 5$

(b) Work out the range of values of x for which C has a negative gradient. (4)

(6 marks)

January 2019 Paper 1H Question 12

- 4 The curve C has equation $y = \frac{1}{3}x^3 - 9x + 1$
- (a) Find $\frac{dy}{dx}$ (2)
- (b) Find the range of values of x for which C has a negative gradient. (3)

(5 marks)

May 2019 Paper 1H Question 24

- 5 A particle P is moving along a straight line that passes through the fixed point O .
The displacement, s metres, of P from O at time t seconds is given by

$$s = t^3 - 6t^2 + 5t - 4$$

Find the value of t for which the acceleration of P is 3 m/s^2

(4 marks)