

Name: _____

IGCSE
Differentiation

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

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.

$t = \dots\dots\dots$

(Total for Question 1 is 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.

($\dots\dots\dots$, $\dots\dots\dots$)

(Total for Question 2 is 5 marks)

June 2018 Paper 2H Question 17

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

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

$$\frac{dy}{dx} = \dots\dots\dots$$

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

(2)

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

.....
(4)

(Total for Question 3 is 6 marks)

January 2019 Paper 1H Question 12

4 The curve C has equation $y = \frac{1}{3}x^3 - 9x + 1$

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

$$\frac{dy}{dx} = \dots\dots\dots (2)$$

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

.....
(3)

(Total for Question 4 is 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

$t = \dots\dots\dots$

(Total for Question 5 is 4 marks)
