

Calculus

Question Paper 3

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Sequences, Functions and Graphs
Sub Topic	Calculus
Booklet	Question Paper 3

Time Allowed: 33 minutes

Score: /27

Percentage: /100

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

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1 $y = x^3 + 6x^2 + 5$

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

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

The curve with equation $y = x^3 + 6x^2 + 5$ has two turning points.

(b) Work out the coordinates of these two turning points.
Show your working clearly.

.....
(4)

(Total for Question 1 is 6 marks)

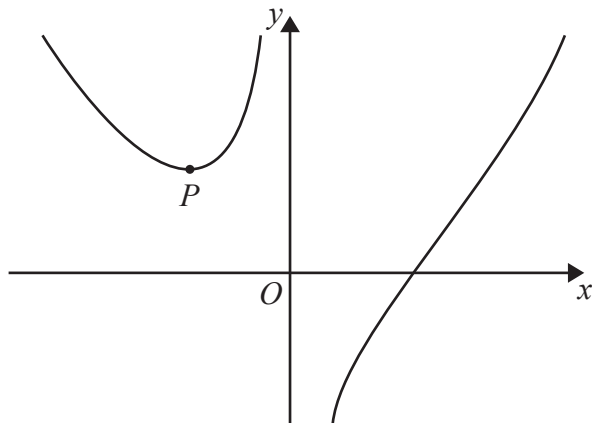
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2 $y = x^2 - \frac{16}{x}$

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

$\frac{dy}{dx} = \dots\dots\dots$
(3)



The graph shows part of the curve with equation $y = x^2 - \frac{16}{x}$

The point P is the turning point of the curve.

(b) Work out the coordinates of P .

$(\dots\dots\dots, \dots\dots\dots)$
(4)

(Total for Question 2 is 7 marks)

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3 The curve C has equation $y = 3x^2 - 12x + 8$

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

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

(b) Find the coordinates of the point on C where the gradient of the curve is 18

$$(\dots\dots\dots, \dots\dots\dots) (3)$$

(Total for Question 3 is 5 marks)

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- 4 A particle is moving along a straight line.
The fixed point O lies on this line.
The displacement of the particle from O at time t seconds is s metres where

$$s = 2t^3 - 12t^2 + 7t$$

- (a) Find an expression for the velocity, v m/s, of the particle at time t seconds.

$v = \dots\dots\dots$
(2)

- (b) Find the time at which the acceleration of the particle is instantaneously zero.

$\dots\dots\dots$ seconds
(2)

(Total for Question 4 is 4 marks)

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5 $y = x^3 - \frac{9}{2}x^2 - 54x + 10$

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

.....
(2)

The curve with equation $y = x^3 - \frac{9}{2}x^2 - 54x + 10$ has two turning points.

(b) Find the x coordinate of each of these two points.

.....
(3)

(Total for Question 5 is 5 marks)