

Basic Differentiation

Question Paper 1

Level	A Level
Subject	Maths
Exam Board	OCR
Topic	Differentiation
Sub Topic	Basic Differentiation
Booklet	Question Paper 1

Time Allowed: 53 minutes

Score: /44

Percentage: /100

- 1 Given that $y = 6x^3 + \frac{4}{\sqrt{x}} + 5x$, find
- (i) $\frac{dy}{dx}$, [4]
- (ii) $\frac{d^2y}{dx^2}$. [2]
- 2 It is given that $f(x) = \frac{6}{x^2} + 2x$.
- (i) Find $f'(x)$. [3]
- (ii) Find $f''(x)$. [2]
- 3 Given that $y = x^5 + \frac{1}{x^2}$, find
- (i) $\frac{dy}{dx}$, [3]
- (ii) $\frac{d^2y}{dx^2}$. [2]
- 4 Given that $f(x) = (x + 1)^2(3x - 4)$,
- (i) express $f(x)$ in the form $ax^3 + bx^2 + cx + d$, [3]
- (ii) find $f'(x)$, [2]
- (iii) find $f''(x)$. [2]
- 5 Find $\frac{dy}{dx}$ in each of the following cases:
- (i) $y = \frac{(3x)^2 \times x^4}{x}$, [3]
- (ii) $y = \sqrt[3]{x}$, [3]
- (iii) $y = \frac{1}{2x^3}$. [2]

6 Given that $f(x) = \frac{4}{x} - 3x + 2$,

(i) find $f'(x)$, [3]

(ii) find $f''\left(\frac{1}{2}\right)$. [4]

7 Given that $y = \frac{5}{x^2} - \frac{1}{4x} + x$, find

(i) $\frac{dy}{dx}$, [4]

(ii) $\frac{d^2y}{dx^2}$. [2]