

1. Given $y = x^3 + 4x + 1$, find the value of $\frac{dy}{dx}$ when $x = 3$

(4)

Q1

(Total 4 marks)



2. Express $\frac{15}{\sqrt{3}} - \sqrt{27}$ in the form $k\sqrt{3}$, where k is an integer.

(4)

Q2

(Total 4 marks)



P 4 2 8 2 3 A 0 3 3 2

3. Find

$$\int \left(3x^2 - \frac{4}{x^2} \right) dx$$

giving each term in its simplest form.

(4)



5. Solve

(a) $2^y = 8$

(1)

(b) $2^x \times 4^{x+1} = 8$

(4)







- Abbie pays into the scheme for n years until she has paid in a total of £67200.

- (c) Hence find the number of years that Abbie pays into the savings scheme. (2)







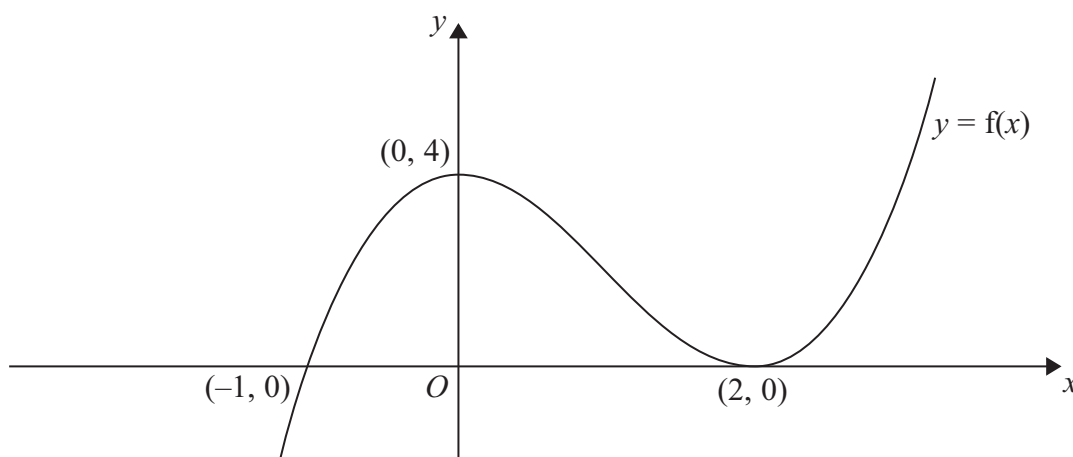


Figure 1 shows a sketch of the curve C with equation $y = f(x)$.

The curve C passes through the point $(-1, 0)$ and touches the x -axis at the point $(2, 0)$.

The curve C has a maximum at the point $(0, 4)$.

- (a) The equation of the curve C can be written in the form

$$y = x^3 + ax^2 + bx + c$$

where a, b and c are integers.

Calculate the values of a , b and c .

(5)

- (b) Sketch the curve with equation $y = f(\frac{1}{2}x)$ in the space provided on page 24

Show clearly the coordinates of all the points where the curve crosses or meets the coordinate axes.

(3)







(Total 9 marks)

TOTAL FOR PAPER: 75 MARKS

END

