

1.

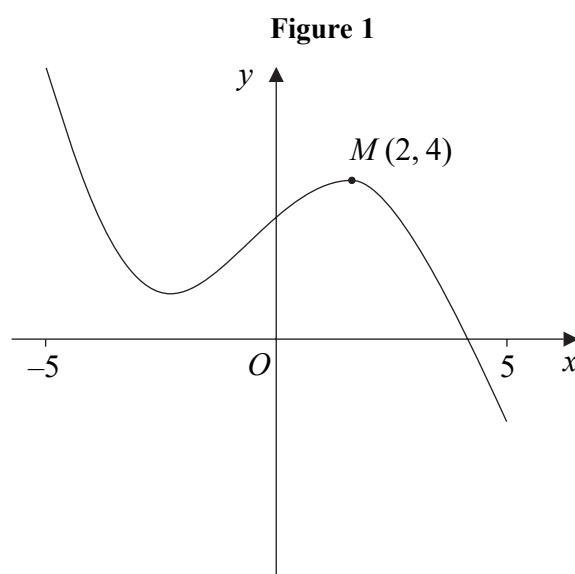


Figure 1 shows the graph of $y = f(x)$, $-5 \leq x \leq 5$.
The point $M(2, 4)$ is the maximum turning point of the graph.

Sketch, on separate diagrams, the graphs of

(a) $y = f(x) + 3$,

(2)

(b) $y = |f(x)|$,

(2)

(c) $y = f(|x|)$.

(3)

Show on each graph the coordinates of any maximum turning points.

Question 1 continued

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blank

(Total 7 marks)

Q1

(7)

(5)

(5)

Question 6 continued

(Total 12 marks)

Q6

7. (a) Show that

$$(i) \quad \frac{\cos 2x}{\cos x + \sin x} \equiv \cos x - \sin x, \quad x \neq (n - \frac{1}{4})\pi, n \in \mathbb{Z}, \quad (2)$$

$$\text{(ii)} \quad \frac{1}{2}(\cos 2x - \sin 2x) \equiv \cos^2 x - \cos x \sin x - \frac{1}{2}. \quad (3)$$

(b) Hence, or otherwise, show that the equation

$$\cos \theta \left(\frac{\cos 2\theta}{\cos \theta + \sin \theta} \right) = \frac{1}{2}$$

can be written as

$$\sin 2\theta = \cos 2\theta. \quad (3)$$

(c) Solve, for $0 \leq \theta < 2\pi$,

$$\sin 2\theta = \cos 2\theta,$$

giving your answers in terms of π . (4)

Question 7 continued

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Question 8 continued

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