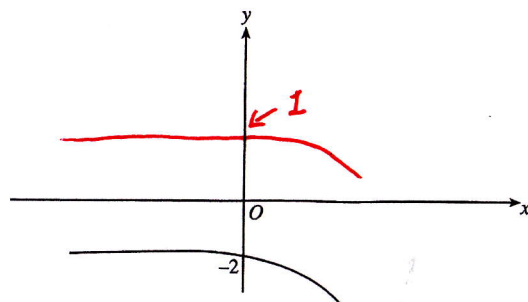


TRANSFORMATION OF GRAPHS

①

The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = f(x) + 3$.
Mark clearly the coordinates of the point where the curve crosses the y-axis.

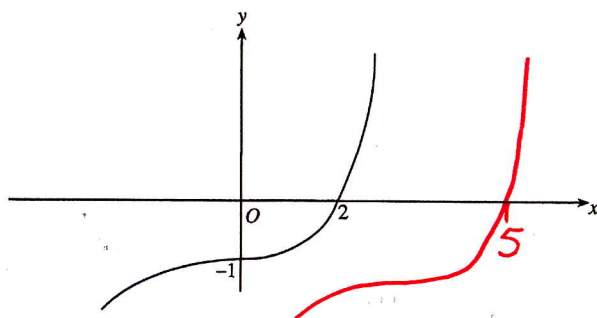
← Moves up 3 units



[2]

(b) The diagram shows a sketch of $y = g(x)$.
On the same diagram, sketch the curve $y = g(x - 3)$.
Mark clearly the coordinates of the point where the curve crosses the x-axis.

← Moves 3 units to the right

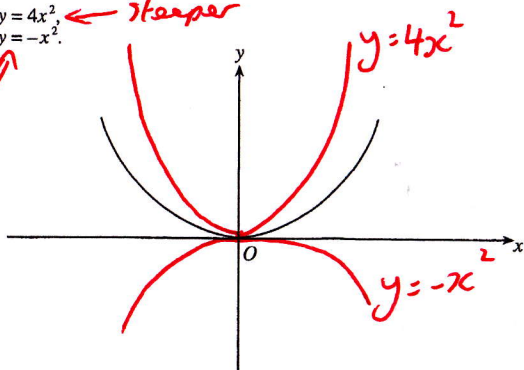


[2]

(c) The diagram shows the sketch of $y = x^2$.
On the same diagram, sketch the curves.

- (i) $y = 4x^2$ ← steeper
(ii) $y = -x^2$

inverted original ↑



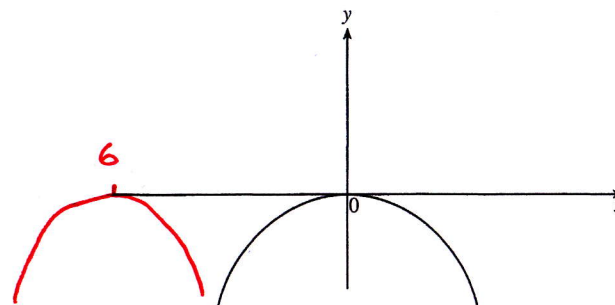
[2]

Turn over.

②

(a) The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = f(x + 6)$.
Mark clearly the coordinates of the point where the curve touches the x-axis.

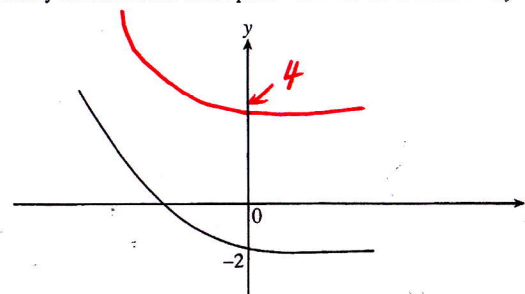
← Moves 6 units to the left



[2]

(b) The diagram shows a sketch of $y = g(x)$.
On the same diagram, sketch the curve $y = g(x) + 6$.
Mark clearly the coordinates of the point where the curve crosses the y-axis.

← Moves 6 units up.

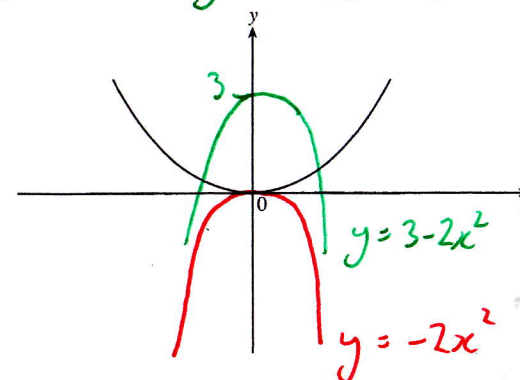


[2]

(c) The diagram shows the sketch of $y = x^2$.
On the same diagram, sketch the curves

- (i) $y = -2x^2$
(ii) $y = 3 - 2x^2$

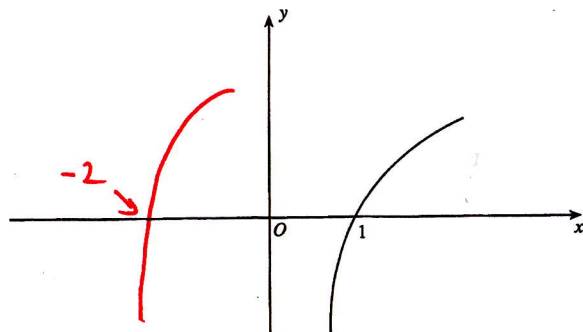
← steeper & inverted
→ $y = -2x^2 + 3$ ← graph from (i) moved 3 units up.



[3]

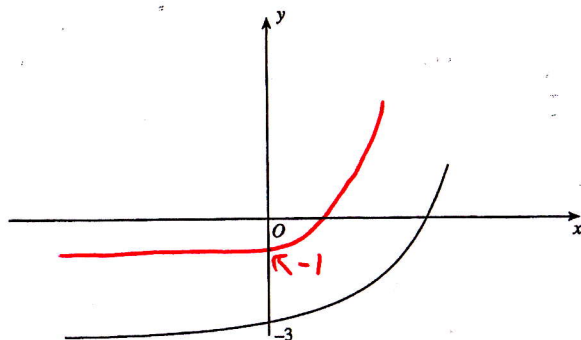
3

- (a) The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = f(x + 3)$.
Mark clearly the coordinates of the point where the curve crosses the x-axis.



[2]

- (b) The diagram shows a sketch of $y = g(x)$.
On the same diagram, sketch the curve $y = g(x) + 2$.
Mark clearly the coordinates of the point where the curve crosses the y-axis.



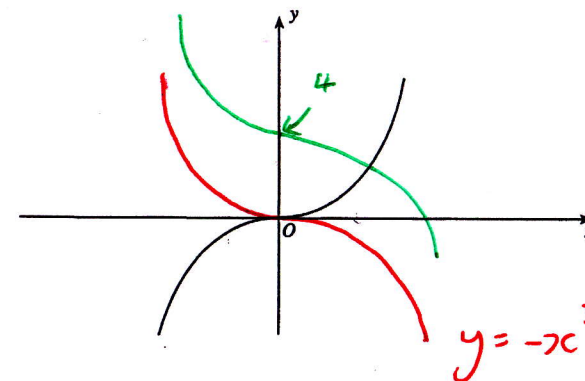
[2]

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- (c) The diagram shows a sketch of $y = x^3$.

On the same diagram, sketch the curves

- (i) $y = -x^3$, ← reflects in x axis
(ii) $y = -x^3 + 4$. ← graph from (i) moved 4 units up



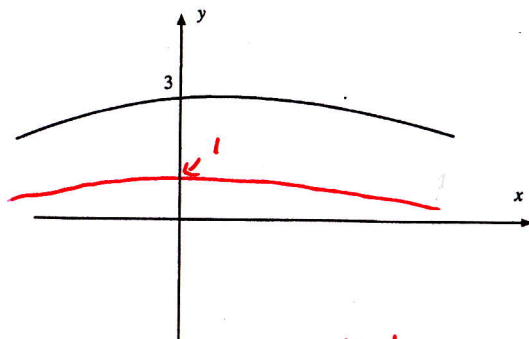
[2]

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Moves 2 units down

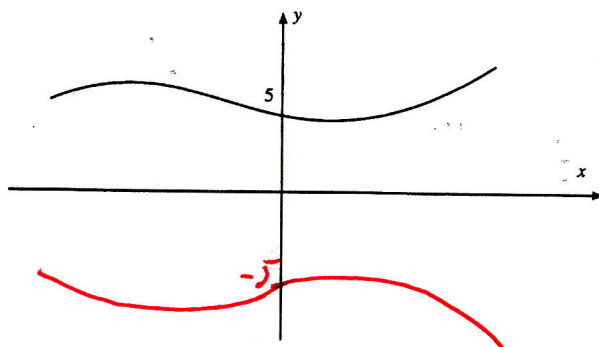
4

- (a) The diagram shows a sketch of $y = f(x)$.
On the same diagram, sketch the curve $y = f(x) - 2$. Mark clearly the coordinates of the point where the curve crosses the y-axis.



reflects in x-axis

- (b) The diagram shows the sketch of $y = g(x)$.
On the same diagram sketch the curve $y = -g(x)$. Mark clearly the coordinates of the point where the curve crosses the y-axis.



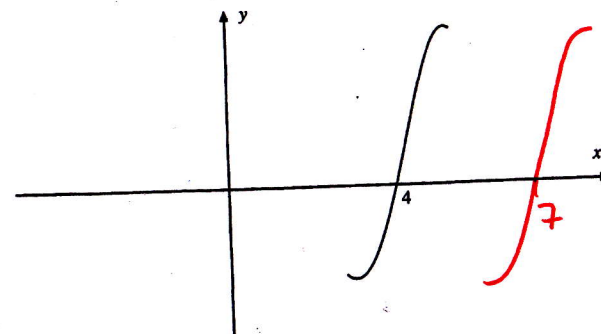
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[2]

[2]

Moves 3 units to right

- (c) The diagram shows the sketch of $y = h(x)$.
On the same diagram sketch the curve $y = h(x - 3)$. Mark clearly the coordinates of the point where the curve crosses the x-axis.



[2]

Examiner
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Turn over.