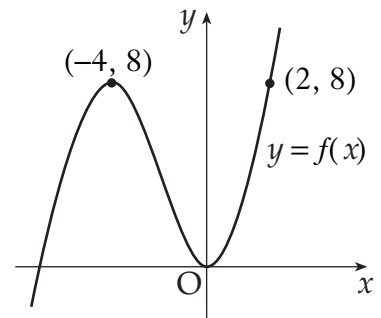


transformations

[SQA] 1. The diagram shows a sketch of the function $y = f(x)$.

- (a) Copy the diagram and on it sketch the graph of $y = f(2x)$.
- (b) On a separate diagram sketch the graph of $y = 1 - f(2x)$.



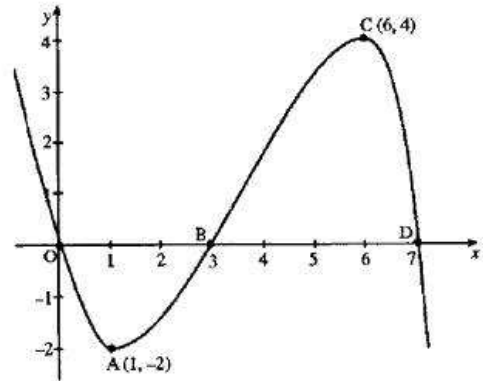
2
3

[SQA] 2. Part of the graph of $y = f(x)$ is shown in the diagram.

On separate diagrams sketch the graphs of

- (a) $y = f(x+1)$
- (b) $y = -2f(x)$.

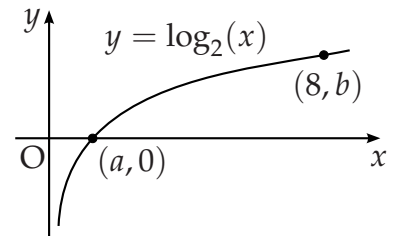
Indicate on each graph the images of O, A, B, C and D.



1

[SQA] 3. The diagram shows a sketch of part of the graph of $y = \log_2(x)$.

- (a) State the values of a and b .
- (b) Sketch the graph of $y = \log_2(x+1) - 3$.



1
3

[SQA] 4. (a) Express $f(x) = x^2 - 4x + 5$ in the form $f(x) = (x - a)^2 + b$.

(b) On the same diagram sketch:

- (i) the graph of $y = f(x)$;
- (ii) the graph of $y = 10 - f(x)$.

(c) Find the range of values of x for which $10 - f(x)$ is positive.

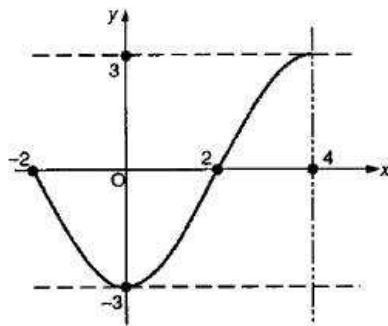
2
4
1

[SQA]

5. The sketch shows the graph of $y = f(x)$ for $-2 \leq x \leq 4$.
The function $g(x)$ has the line $x = 4$ as an axis of symmetry and $g(x) = f(x)$ for $-2 \leq x \leq 4$.

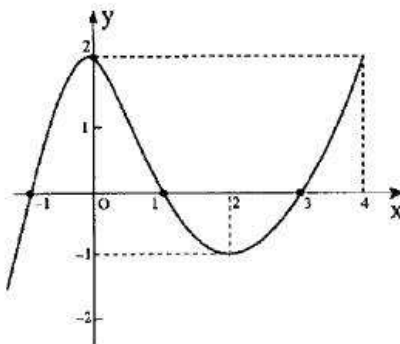
On separate sketches indicate

- (a) $y = g(x)$ for $-2 \leq x \leq 10$
(b) $y = -2g(x)$ for $0 \leq x \leq 8$

2
2

[SQA]

6. The diagram shows the graph of $y = f(x)$.
Sketch the graph of $y = 2 - f(x)$.



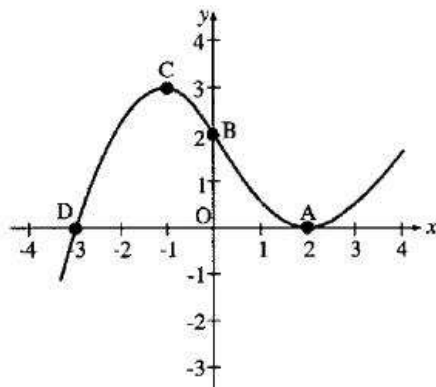
3

[SQA]

7. Part of the graph of $y = f(x)$ is shown in the diagram.
On separate diagrams sketch the graphs of

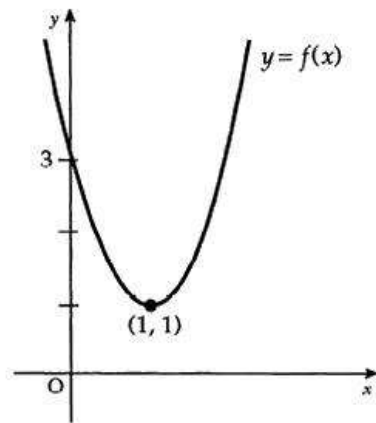
- (i) $y = f(x - 1)$
(ii) $y = -f(x) - 2$

indicating on each graph the images of A, B, C and D.



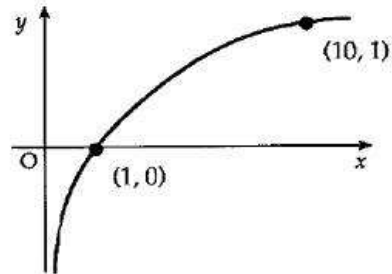
5

[SQA] 8. The diagram shows a sketch of the parabola $y = f(x)$.



- (a) Copy the sketch of $y = f(x)$. On your diagram, draw the parabola with equation $y = -f(x) + 3$. (4)
- (b) State the values of x for which $3 - f(x) \geq 0$. (2)
- (c) If $g(x) = 3 - f(x)$, express $g(x)$ in terms of x . (3)

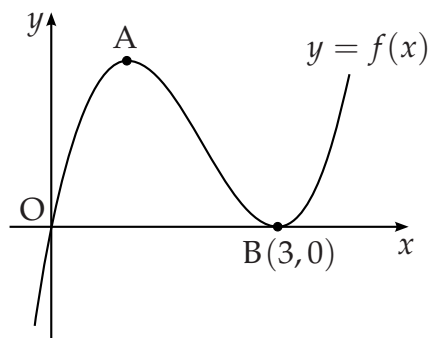
[SQA] 9. Make a copy of this graph of $y = \log_{10} x$.
On your copy, sketch the graph of $y = \log_{10}(x - 2)$.



3

[SQA] 10. A sketch of the graph of $y = f(x)$ where $f(x) = x^3 - 6x^2 + 9x$ is shown below.

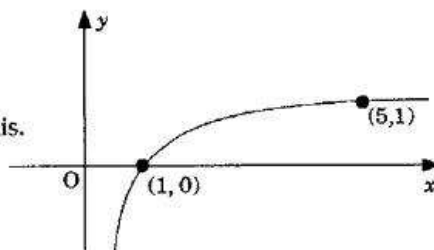
The graph has a maximum at A and a minimum at B(3,0).



- (a) Find the coordinates of the turning point at A. 4
- (b) Hence sketch the graph of $y = g(x)$ where $g(x) = f(x + 2) + 4$.
Indicate the coordinates of the turning points. There is no need to calculate the coordinates of the points of intersection with the axes. 2
- (c) Write down the range of values of k for which $g(x) = k$ has 3 real roots. 1

[SQA] 11. The diagram shows a sketch of part of the graph of $y = \log_5 x$.

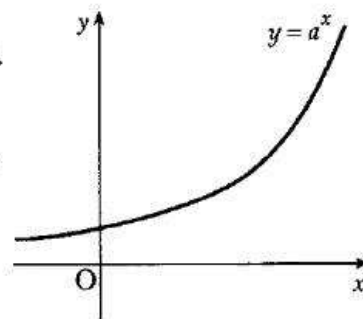
- (a) Make a copy of the graph of $y = \log_5 x$.
On your copy, sketch the graph of $y = \log_5 x + 1$.
Find the coordinates of the point where it crosses the x -axis.



- (b) Make a second copy of the graph of $y = \log_5 x$.
On your copy, sketch the graph of $y = \log_5 \frac{1}{x}$.

[SQA] 12. The diagram shows a sketch of part of the graph of $y = a^x$, $a > 1$.

- (a) If $(1, t)$ and $(u, 1)$ lie on this curve, write down the values of t and u . 2
- (b) Make a copy of this diagram and on it sketch the graph of $y = a^{2x}$. 2
- (c) Find the coordinates of the point of intersection of $y = a^{2x}$ with the line $x = 1$. 1



[END OF QUESTIONS]