Graphs

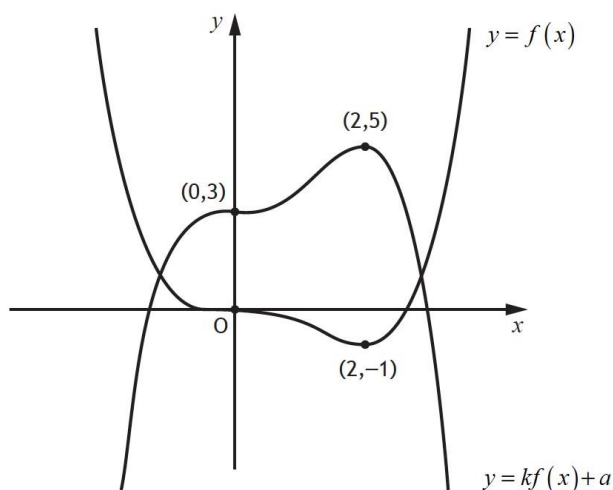## Go to the appropriate Past Paper for the answers

2019 Paper 1

10. The diagram shows the graphs with equations $y = f(x)$ and $y = kf(x) + a$.
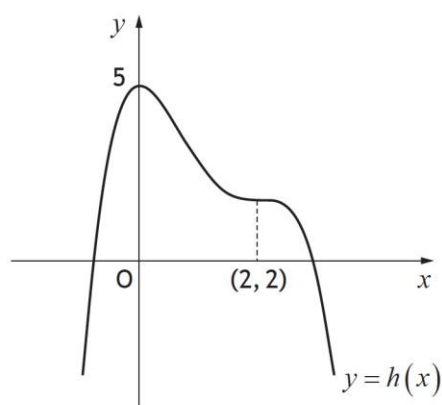

(a) State the value of a.

1

(b) Find the value of k.

1

Specimen 5 Paper 2

7. The diagram below shows the graph of a quartic $y = h(x)$, with stationary points at $(0, 5)$ and $(2, 2)$.

On separate diagrams sketch the graphs of:
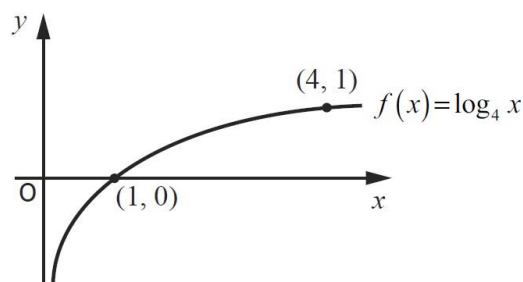
(a) $y = 2 - h(x)$.

2

(b) $y = h'(x)$.

3

2016 Paper 1

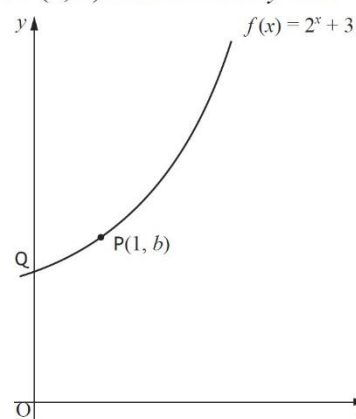10. The diagram below shows the graph of the function $f(x)=\log_4 x$, where $x>0$.

2

The inverse function, f^{-1}, exists.

On the diagram in your answer booklet, sketch the graph of the inverse function.

2015 Paper 1

13. The function $f(x) = 2^x + 3$ is defined on $\mathbb{R}$, the set of real numbers.

The graph with equation $y = f(x)$ passes through the point P$(1, b)$ and cuts the y-axis at Q as shown in the diagram.

(a) What is the value of b?

1

(b) (i) Copy the above diagram.

On the same diagram, sketch the graph with equation $y = f^{-1}(x)$.

1

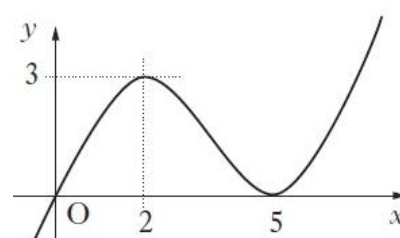(ii) Write down the coordinates of the images of P and Q.

3

(c) R $(3,11)$ also lies on the graph with equation $y = f(x)$.

Find the coordinates of the image of R on the graph with equation $y = 4 - f(x + 1)$.

2

2014 Paper 1

11. The diagram shows part of the graph of $y = f(x)$.

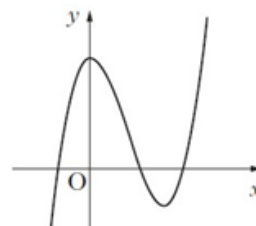Sketch the graph of $y = 2f(x) + 1$

2

2013 Paper 1

11. The diagram shows part of the graph of $y = f(x)$.

    Sketch the graph of $y = -f(x - k)$, $k > 0$
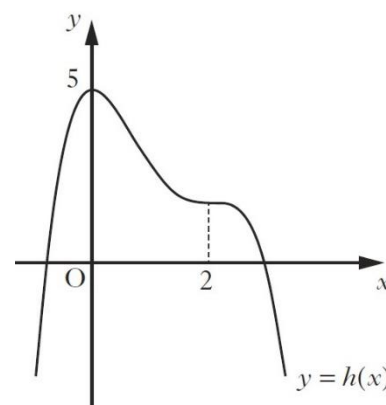
    2

2012 Paper 2

4. The diagram below shows the graph of a quartic $y = h(x)$, with stationary points at $x = 0$ and $x = 2$.

   On separate diagrams sketch the graphs of:

   (a) $y = h'(x)$;
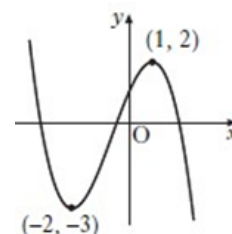
   3

   (b) $y = 2 - h'(x)$.

   3

2011 Paper 1

11. The diagram shows part of the graph of $y = f(x)$.

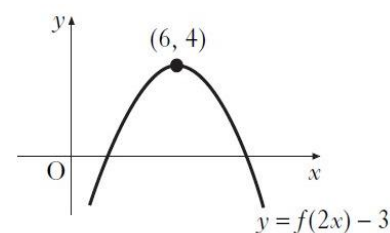   Sketch the graph of $y = f(x + 2) - 1$

    2

2010 Paper 2

20. The diagram shows the graph of $y = f(2x) - 3$.

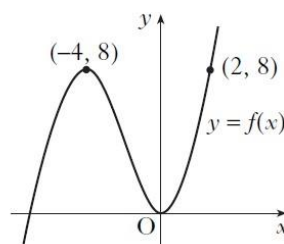   What are the coordinates of the turning point on the graph of $y = f(x)$?

    2

2009 Paper 1

23. The diagram shows a sketch of the function $y = f(x)$.

    (a) Copy the diagram and on it sketch the graph of $y = f(2x)$.

    2

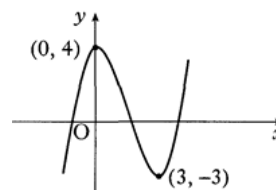   (b) On a separate diagram sketch the graph of $y = 1 - f(2x)$.

    3

2008 Paper 1

11. The diagram shows part of the graph of $y = f(x)$.

    Sketch the graph of $y = -f(x - 2)$

    2

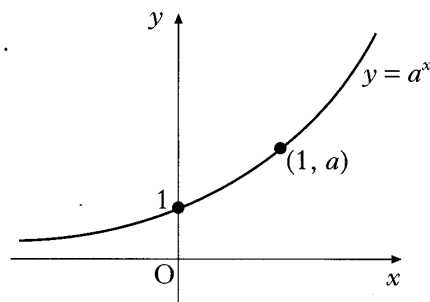## 2007 Paper 2

9. The diagram shows the graph of $y = a^x$, $a > 1$.

   On separate diagrams, sketch the graphs of:

   (a) $y = a^{-x}$;

   (b) $y = a^{1-x}$.

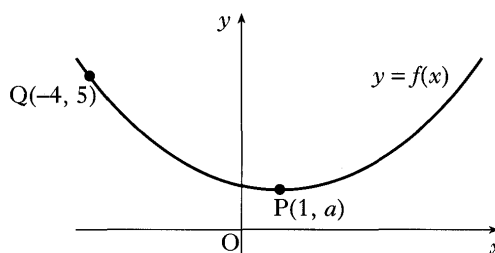   **2**
   2

2006 Paper 2

7. The diagram shows the graph of a function $y = f(x)$.

   Copy the diagram and on it sketch the graphs of:

   (a) $y = f(x - 4)$;
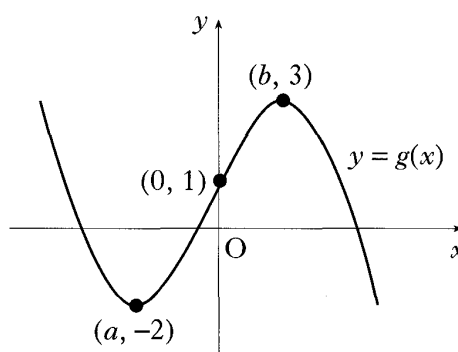
   (b) $y = 2 + f(x - 4)$.

   2
   2

2004 Paper 1

4. The diagram shows the graph of $y = g(x)$.

   (a) Sketch the graph of $y = -g(x)$.

   (b) On the same diagram, sketch the graph of $y = 3 - g(x)$.

   2

   2