

Functions

1)

$f(x) = 3 - x$ and $g(x) = \frac{3}{x}$, $x \neq 0$.

(a) Find $p(x)$ where $p(x) = f(g(x))$. 2

(b) If $q(x) = \frac{3}{3-x}$, $x \neq 3$, find $p(q(x))$ in its simplest form. 3

2)

Functions $f(x) = \frac{1}{x-4}$ and $g(x) = 2x + 3$ are defined on suitable domains.

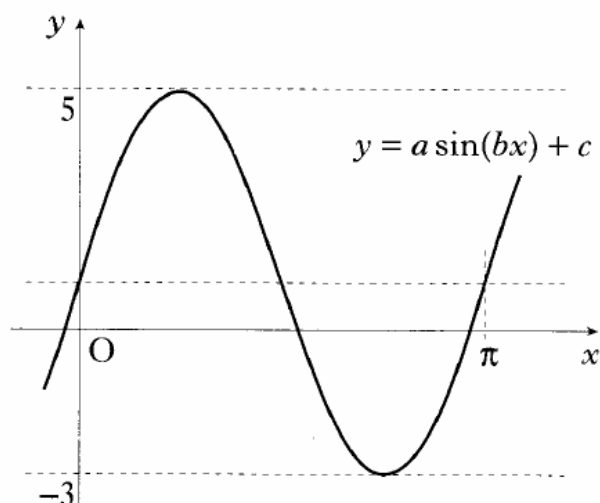
(a) Find an expression for $h(x)$ where $h(x) = f(g(x))$. 2

(b) Write down any restriction on the domain of h . 1

3)

The diagram shows a sketch of part of the graph of a trigonometric function whose equation is of the form $y = a \sin(bx) + c$.

Determine the values of a , b and c .



3

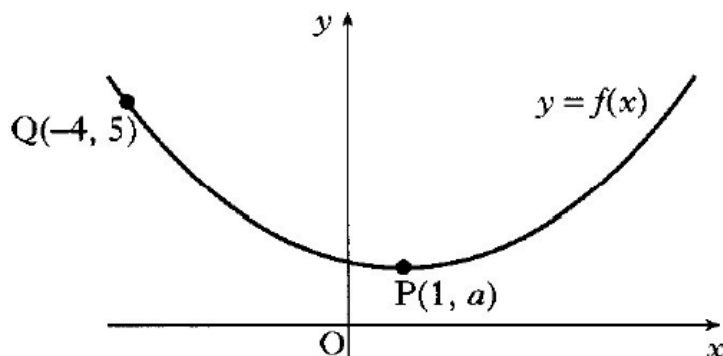
4)

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

Copy the diagram and on it sketch the graphs of:

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

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

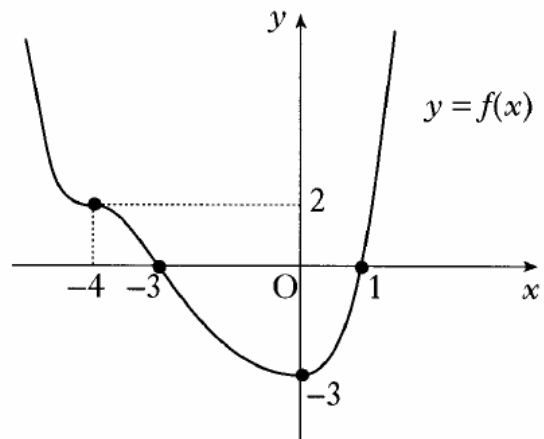


5)

The diagram shows the graph of a function f .

f has a minimum turning point at $(0, -3)$ and a point of inflexion at $(-4, 2)$.

- (a) Sketch the graph of $y = f(-x)$.
 (b) On the same diagram, sketch the graph of $y = 2f(-x)$.



2
2

6)

The function f , defined on a suitable domain, is given by $f(x) = \frac{3}{x+1}$.

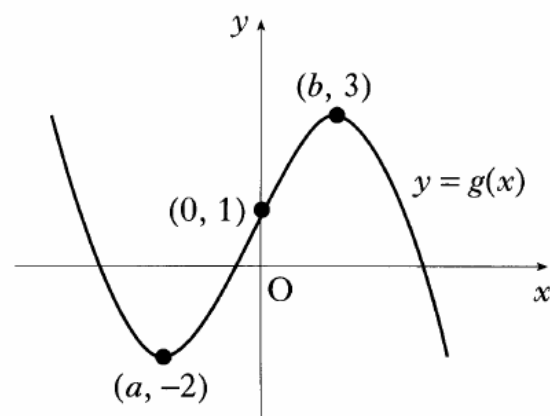
- (a) Find an expression for $h(x)$ where $h(x) = f(f(x))$, giving your answer as a fraction in its simplest form.
 (b) Describe any restriction on the domain of h .

3
1

7)

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

8)

Functions f and g , defined on suitable domains, are given by $f(x) = x^2 + 1$ and $g(x) = 1 - 2x$.

Find:

- (a) $g(f(x))$;
 (b) $g(g(x))$.

2
2

9)

A function f is given by $f(x) = \sqrt{9 - x^2}$.

What is a suitable domain of f ?

2