

Please attempt the following questions in preparation for the online session on 23<sup>rd</sup> November 2017.

## Q1

The point  $G(4,10)$  lies on the graph with equation  $y = f(x)$ .

Find the coordinates of the image of  $G$  on the graph with equation  $y = 5 - f(x + 2)$ .

## Q2

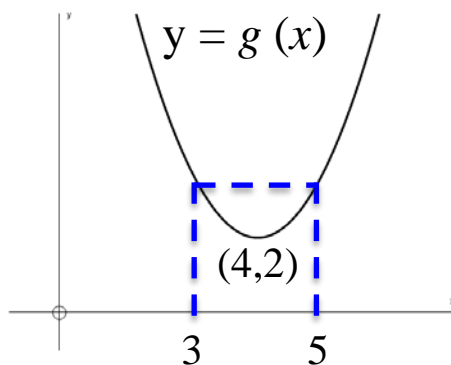
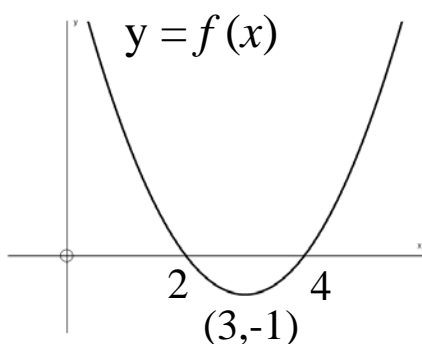
A quadratic function  $f$  is defined on the set of real numbers

Diagram 1 shows part of the graph with equation  $y = f(x)$ .

The turning point is  $(3,-1)$ .

Diagram 2 shows part of the graph with equation  $y = g(x)$ .

The turning point is  $(4,2)$ .



Given that  $g(x) = f(x + a) + b$ .

What are the values of  $a$  and  $b$ ?

## Q3

Functions  $f$  and  $g$  are defined on the set of real numbers.

The inverse functions  $f^{-1}$  and  $g^{-1}$  both exist.

(a) If  $f(x) = x^3 + 3$ , find  $f^{-1}(x)$ .

(b) If  $g(-1) = 11$ , write down the value of  $g^{-1}(11)$ .

Q4

Functions  $f$  and  $g$  are defined on suitable domains by  $f(x) = 3x$  and

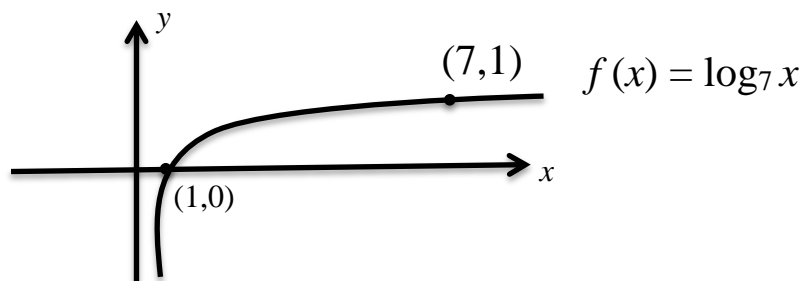
$$g(x) = 2 \cos x$$

(a) Evaluate  $f(g(0))$ .

(b) Find an expression for  $g(f(x))$ .

Q5

The diagram below show the graph of the function  $f(x) = \log_7 x$ , where  $x > 0$ .



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

Sketch the graph of the inverse function,  $f^{-1}$ , of  $f(x) = \log_7 x$  ?