

$$f(x) = 2x + a$$

$$g(x) = ax + 7$$

$$fg(x) = 8x + b$$

$a$  and  $b$  are constants.  
Work out the values of  $a$  and  $b$ .

The function  $g$  is such that  
 $g(x) = 5x - 4$

a) Find  $g^{-1}(x)$

The function  $h$  is such that  
 $h(x) = kx^2$  where  $K$  is a constant.

Given that  $gh(3) = 86$

b) Work out the value of  $K$

The functions  $f(x)$  and  $g(x)$  are given by the following:

$$f(x) = 5x - 2$$

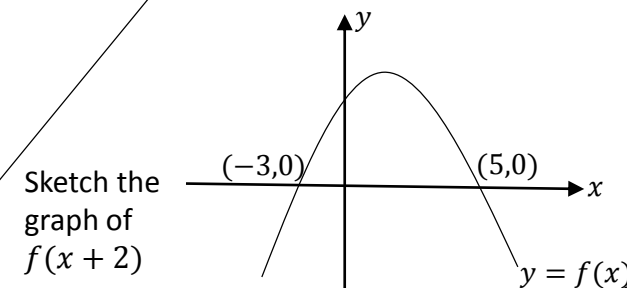
$$g(x) = x^2 + 3x$$

a) Find the value of  $f(-3)$

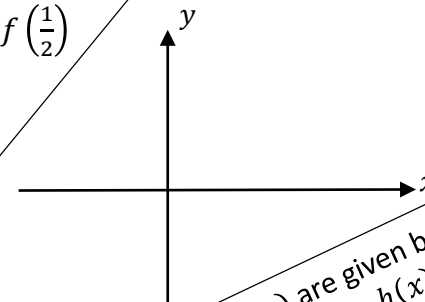
b) Find the value of  $g(4)$

c) Find the value of  $f\left(\frac{1}{2}\right)$

The diagram shows a sketch of the graph  
 $y = f(x)$ .  
The graph passes through the points  
 $(-3,0)$  and  $(5,0)$ .



Sketch the  
graph of  
 $f(x+2)$



The functions  $h(x)$  and  $g(x)$  are given by the following:  
 $h(x) = x^2 + 5$   
 $g(x) = 2x - 7$

a) Find the value of  $x$  when  $g(x) = 23$

b) Find the solutions for  $x$  when  $h(x) = 9$



The functions  $f(x)$  and  $g(x)$  are given by the following:

$$f(x) = 4x$$

$$g(x) = 5 + 3x$$

a) Calculate the value of  $fg(2)$

b) Calculate the value of  $gf(-5)$

The functions  $h(x)$  and  $g(x)$  are given by the following:  
 $h(x) = x^2 + 2$   
 $g(x) = 2x - 3$

a) Calculate the value of  $gh(3)$

b) Calculate the value of  $hg\left(\frac{1}{2}\right)$

The functions  $h(x)$  and  $g(x)$  are  
given by the following:

$$h(x) = 5x$$

$$g(x) = 4x + 1$$

a) Find  $hg(x)$

b) Find  $gh(x)$

c) Find the value of  $x$  when  
 $hg(x) = 60$

The functions  $f(x)$  and  $g(x)$  are given by the following:  
 $f(x) = 3x$   
 $g(x) = 2x - 3$

Solve the equation  $fg(x) = 21$

For all values of  $x$ ,  $f(x) = x^2 + 1$ ,  $h(x) = 5x^2 - 7$

a) Find the expression for  $f^{-1}(x)$

b) Find an expression for  $h^{-1}(x)$

$$f(x) = 4x + 3$$

a) Find the expression for  $f^{-1}(x)$

b) Calculate the expression  $f^{-1}(-5)$

For all values of  $x$ ,  $f(x) = x^2 + 3$  and  $g(x) = x - 1$   
a) Show that  $fg(x) = x^2 - 2x + 4$

b) Solve  $fg(x) = gf(x)$