

Topical Worksheets for Cambridge IGCSE™  
Mathematics (0580)

**Functions**

1<sup>st</sup> edition, for examination until 2025

1  $h(x) = \frac{5x - 1}{3}$

Find  $h^{-1}(x)$ .

$h^{-1}(x) = \dots\dots\dots$  [3]

[Total: 3]

2  $f(x) = 3x - 5$   $g(x) = 2^x$

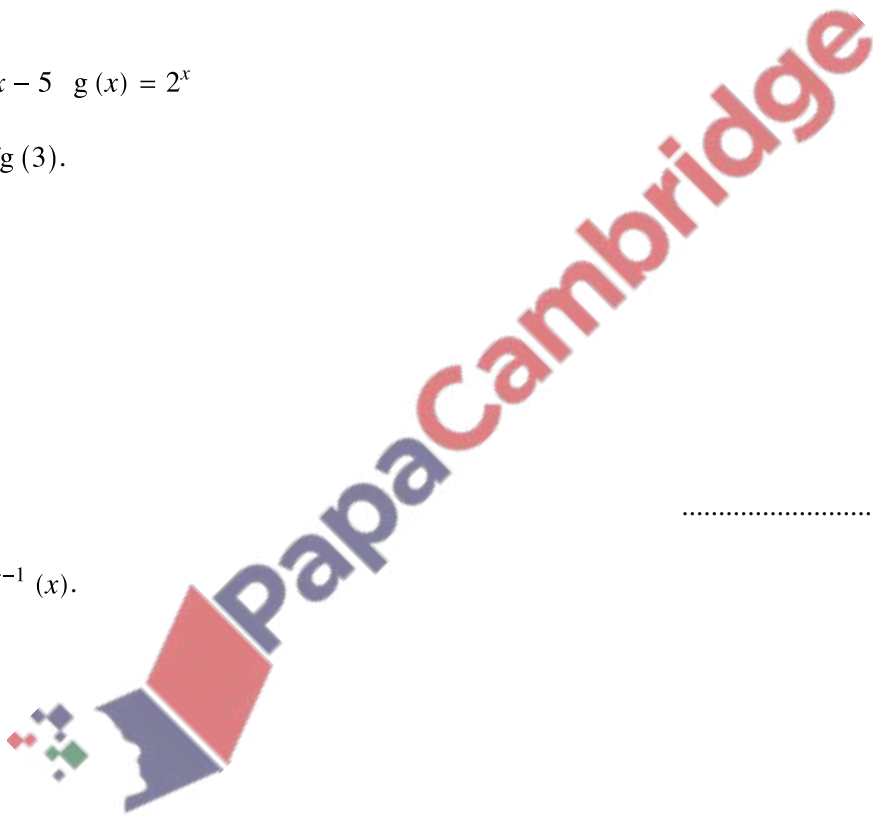
(a) Find  $fg(3)$ .

$\dots\dots\dots$  [2]

(b) Find  $f^{-1}(x)$ .

$f^{-1}(x) = \dots\dots\dots$  [2]

[Total: 4]



3  $f(x) = 4x + 3$   $g(x) = 5x - 4$

$fg(x) = 20x + p$

Find the value of  $p$ .

$p = \dots\dots\dots$  [2]

[Total: 2]

4  $f(x) = 2x + 3$

Find  $f(1 - x)$  in its simplest form.

$\dots\dots\dots$  [2]

[Total: 2]

5  $f(x) = 7x - 2$   $g(x) = x^2 + 1$   $h(x) = 3^x$

(a) Find  $gh(2)$ .



$\dots\dots\dots$  [2]

(b) Find  $f^{-1}(x)$ .

$f^{-1}(x) = \dots\dots\dots$  [2]

(c)  $gg(x) = ax^4 + bx^2 + c$

Find the values of  $a$ ,  $b$  and  $c$ .

$$a = \dots\dots\dots$$

$$b = \dots\dots\dots$$

$$c = \dots\dots\dots \quad [3]$$

(d) Find  $x$  when  $hf(x) = 81$ .

$$x = \dots\dots\dots \quad [3]$$

[Total: 10]

6  $f(x) = \frac{3}{x+2}, x \neq -2 \quad g(x) = 8x - 5 \quad h(x) = x^2 + 6$

(a) Work out  $g\left(\frac{1}{4}\right)$ .

$$\dots\dots\dots \quad [1]$$

(b) Work out  $ff(2)$ .

..... [2]

(c) Find  $gg(x)$ , giving your answer in its simplest form.

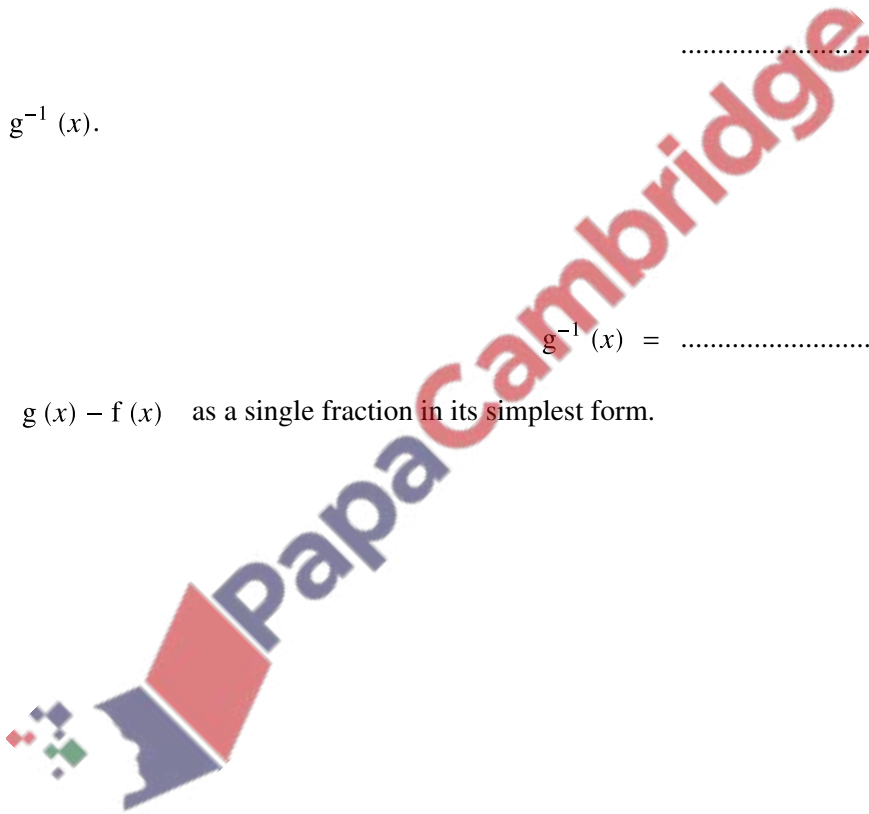
..... [2]

(d) Find  $g^{-1}(x)$ .

$g^{-1}(x) =$  ..... [2]

(e) Write  $g(x) - f(x)$  as a single fraction in its simplest form.

..... [3]



- (f) (i) Show that  $hg(x) = 19$  simplifies to  $16x^2 - 20x + 3 = 0$ .

[3]

- (ii) Use the quadratic formula to solve  $16x^2 - 20x + 3 = 0$ .  
Show all your working and give your answers correct to 2 decimal places.

$$x = \dots\dots\dots \text{ or } x = \dots\dots\dots \quad [4]$$

[Total: 17]

7

(a)  $h(3x) = k^x$

$$f(x) = 7 + 3x \quad g(x) = x^4 \quad h(x) = 3^x$$

Find the value of  $k$ .

$$k = \dots\dots\dots \quad [2]$$

(b) Find the value of  $x$  when  $f(x) = g(2)$ .

$$x = \dots\dots\dots [2]$$

(c) Find  $f^{-1}(x)$ .

$$f^{-1}(x) = \dots\dots\dots [2]$$

[Total: 6]

8  $h(x) = ax^2 + 1$

Find the value of  $a$  when  $h(-2) = 21$ .

$$a = \dots\dots\dots [2]$$

[Total: 2]

9  $f(x) = x^3$   $g(x) = 5x + 2$

(a) Find  $gf(x)$ .

$$\dots\dots\dots [1]$$

(b) Find  $g^{-1}(x)$ .

$$g^{-1}(x) = \dots\dots\dots [2]$$

[Total: 3]

10  $f(x) = 3x + 4$   $g(x) = 2x - 1$   $h(x) = 3^x$

(a) Find  $g\left(\frac{1}{2}\right)$ .

$$\dots\dots\dots [1]$$

(b) Find  $fh(-1)$ .

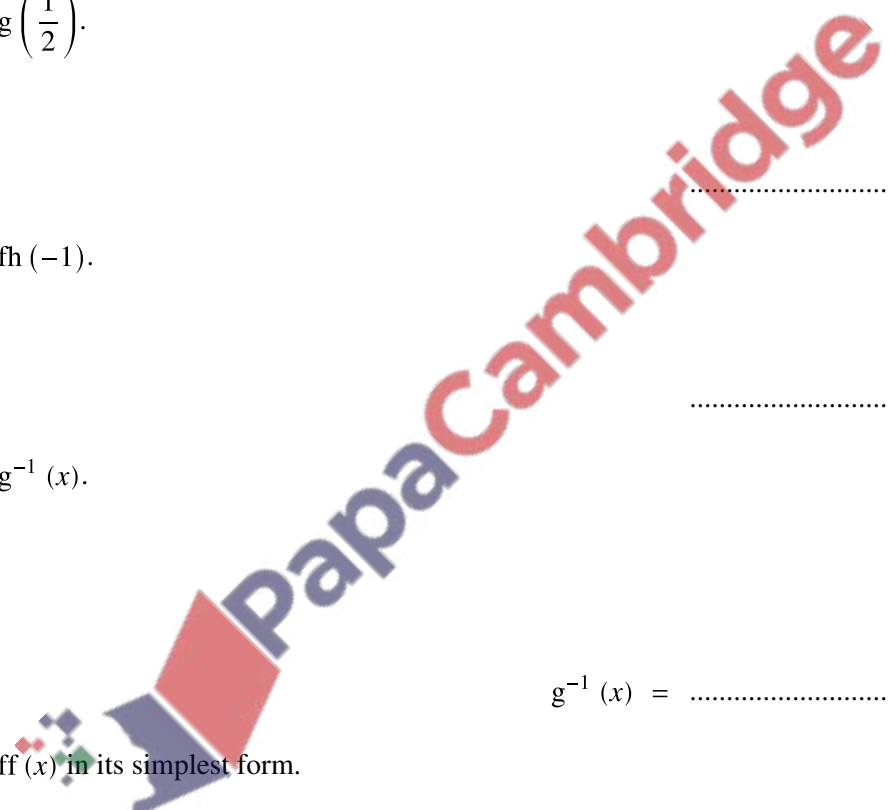
$$\dots\dots\dots [2]$$

(c) Find  $g^{-1}(x)$ .

$$g^{-1}(x) = \dots\dots\dots [2]$$

(d) Find  $ff(x)$  in its simplest form.

$$\dots\dots\dots [2]$$





(e) Find  $(f(x))^2$  in the form  $ax^2 + bx + c$ .

..... [2]

(f) Find  $x$  when  $h^{-1}(x) = g(2)$ .

$x =$  ..... [2]

[Total: 11]

11  $f(x) = 5 - 2x$        $g(x) = x^2 + 8$

(a) Calculate  $ff(-3)$ .

..... [2]

(b) Find

(i)  $g(2x)$ ,

..... [1]

(ii)  $f^{-1}(x)$ .

$f^{-1}(x) =$  ..... [2]

[Total: 5]

12  $f(x) = 2x - 3$        $g(x) = x^2 + 1$

(a) Find  $gg(2)$ .

..... [2]

(b) Find  $g(x+2)$ , giving your answer in its simplest form.

..... [2]

(c) Find  $x$  when  $f(x) = 7$ .

$x =$  ..... [2]

(d) Find  $f^{-1}(x)$ .

$f^{-1}(x) =$  ..... [2]

[Total: 8]

**13**  $f(x) = 8 - 3x$   $g(x) = \frac{10}{x-1}$ ,  $x \neq -1$   $h(x) = 2^x$

Find

(a)  $hf\left(\frac{8}{3}\right)$ ,

..... [2]

(b)  $gh(-2)$ ,

..... [2]

(c)  $g^{-1}(x)$ ,

$g^{-1}(x) = \dots\dots\dots$  [3]

(d)  $f^{-1}f(5)$ .

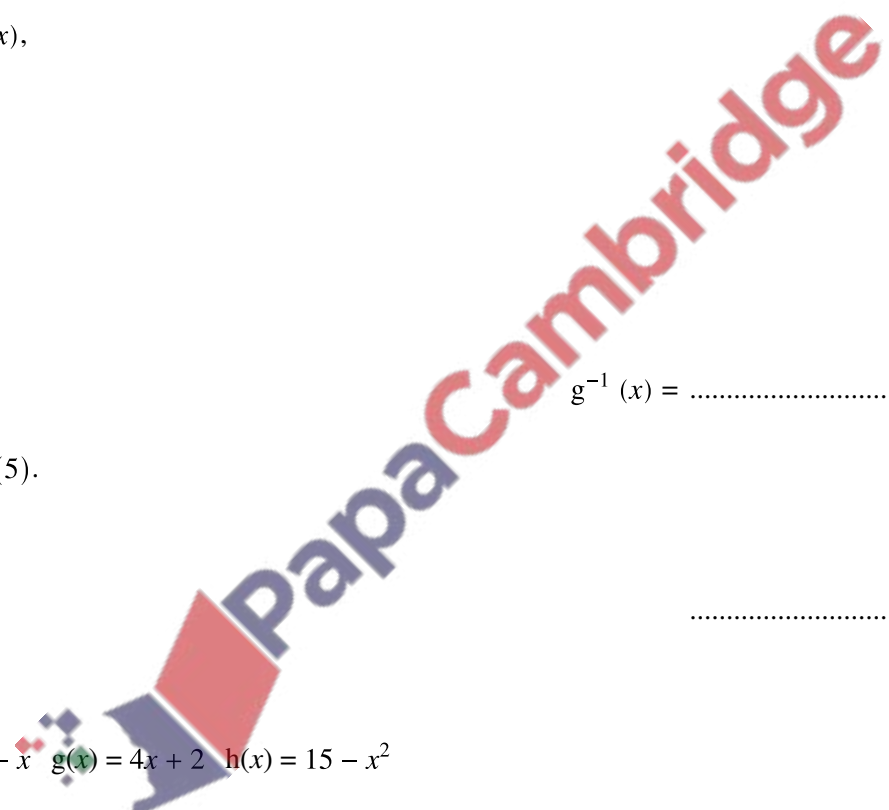
..... [1]

[Total: 8]

**14**  $f(x) = 7 - x$   $g(x) = 4x + 2$   $h(x) = 15 - x^2$

(a) Find  $ff(2)$ .

..... [2]



(b) Find  $gf(x)$  in its simplest form.

..... [2]

(c) Find  $h(2x)$  in its simplest form.

..... [2]

[Total: 6]

15  $h(x) = x^x, x > 0$

(a) Calculate  $h(0.3)$ .

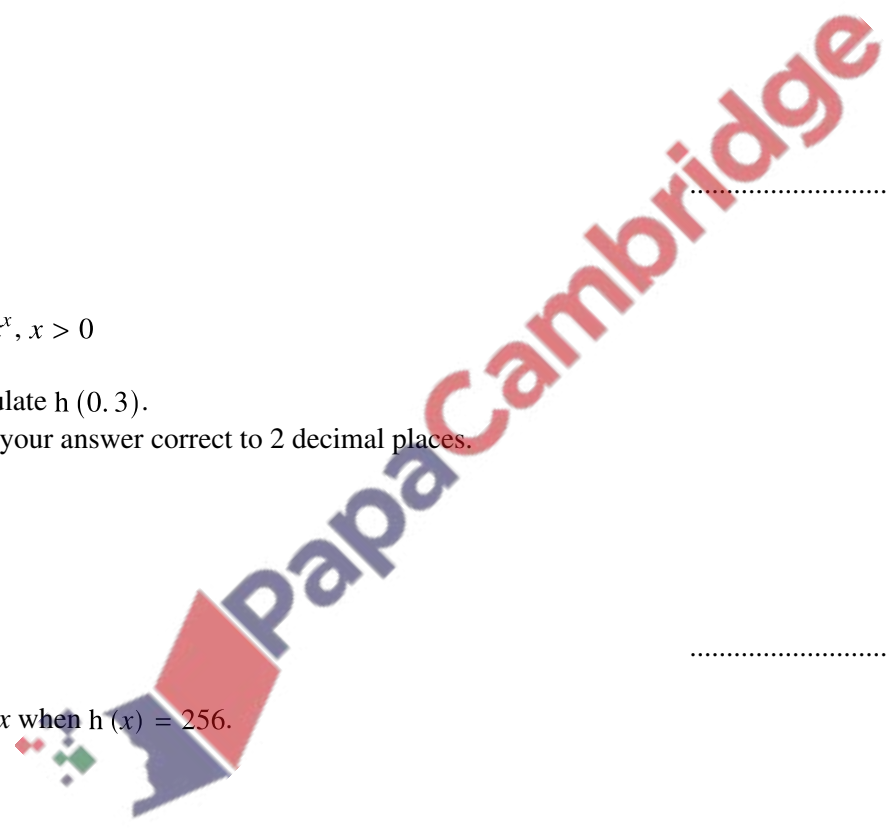
Give your answer correct to 2 decimal places.

..... [2]

(b) Find  $x$  when  $h(x) = 256$ .

$x =$  ..... [1]

[Total: 3]



16  $f(x) = 3x + 5$   $g(x) = x^2$

(a) Find  $g(3x)$ .

Answer(a) ..... [1]

(b) Find  $f^{-1}(x)$ , the inverse function.

Answer(b)  $f^{-1}(x) =$  ..... [2]

(c) Find  $ff(x)$ .  
Give your answer in its simplest form.

Answer(c) ..... [2]

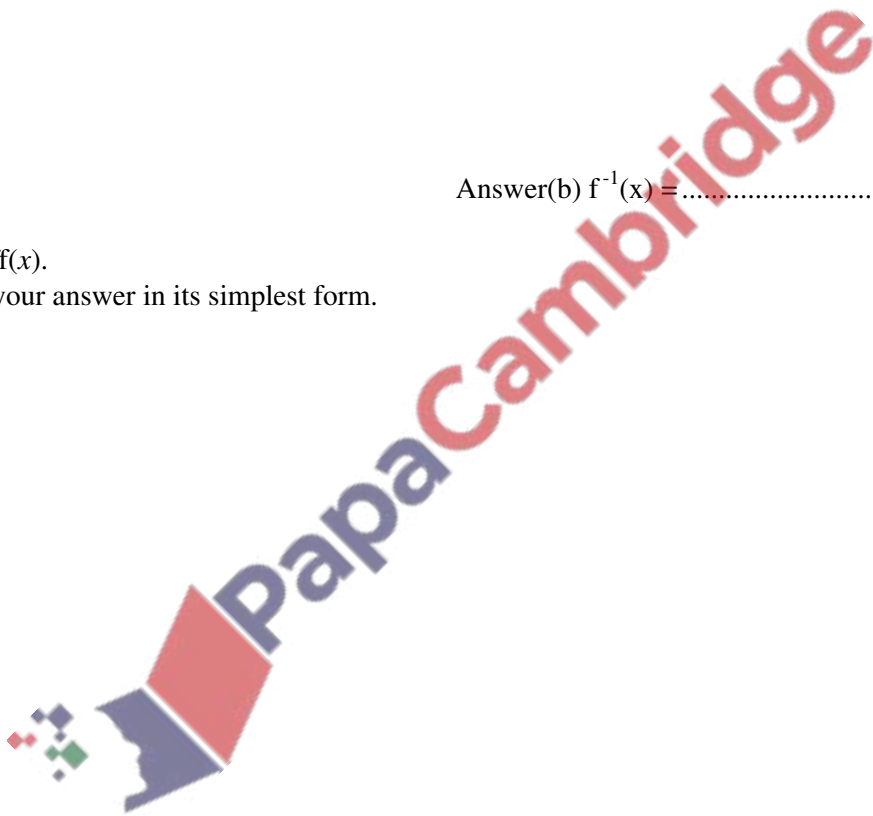
[Total: 5]

17

$$f(x) = 5 - 3x$$

(a) Find  $f(6)$ .

Answer(a) ..... [1]



(b) Find  $f(x + 2)$ .

*Answer(b)* ..... [1]

(c) Find  $ff(x)$ , in its simplest form.

*Answer(c)* ..... [2]

(d) Find  $f^{-1}(x)$ , the inverse of  $f(x)$

*Answer(d)*  $f^{-1}(x) =$  ..... [2]

[Total: 6]

