

Composite Functions





REVISE THIS TOPIC

CHECK YOUR ANSWERS



1
$$f(x) = 3x + 4$$

$$g(x) = x + 10$$

$$h(x) = x^2$$



(a) Work out fg(x)

Give your answer in the form ax + b where a and b are integers

$$fg(x) = \underline{\hspace{1cm}}$$

(2)

(b) Work out gf(x)Give your answer in the form ax + b where a and b are integers

$$gf(x) = \underline{\qquad \qquad }$$

(a) Work out gh(x)

$$h(x) =$$

(1)

(Total for Question 1 is 5 marks)



2
$$f(x) = x - 3$$

$$g(x) = x^2 + 1$$

$$h(x) = 10x$$



(a) Work out fg(*x*) Fully simplify your answer.

$$fg(x) =$$
______(2)

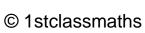
(b) Work out hg(x) Fully simplify your answer.

$$hg(x) = \underline{\hspace{1cm}} (2)$$

(c) Work out gh(*x*) Fully simplify your answer.



(Total for Question 2 is 6 marks)





$$3 \quad f(x) = \frac{x}{4}$$

$$g(x) = 4x - 8$$

$$h(x) = \sqrt{x}$$



(a) Work out fg(*x*) Fully simplify your answer.

$$fg(x) = \underline{\hspace{1cm}} (2)$$

(b) Work out gf(x)Fully simplify your answer.

$$gf(x) = \underline{\hspace{1cm}} (2)$$

(c) Work out hf(x) Fully simplify your answer.

$$hf(x) =$$

(Total for Question 3 is 6 marks)



- 4 f(x) = x 5
- $g(x) = x^2 + 30$



(a) Work out fg(x)Fully simplify your answer.

fg(x) =

(b) Work out fg(3)

(2)

(c) Work out gf(x)Give your answer in the form $ax^2 + bx + c$ where a, b and c are integers.

gf(x) =

(Total for Question 4 is 7 marks)





5
$$f(x) = 2x + 1$$

$$g(x) = \sqrt{x+3}$$



(a) Work out g(13)

(1)

(b) Work out fg(13)

(1)

(c) Work out gf(16)

(Total for Question 5 is 4 marks)

6 f(x) = x + 2

 $g(x) = x^3$

 $h(x) = \sqrt{x}$



(a) Work out gf(3)

(2)

(b) Work out gh(x)

Give your answer in the form x^k where k is a fraction.

 $gh(x) = \underline{\qquad \qquad (2)}$

(c) Work out gf(x)

Give your answer in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are integers.

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gf(x) =

(Total for Question 6 is 7 marks)



7
$$f(x) = 2^x$$

$$g(x) = 1 - x$$

$$h(x) = 2 + x$$



(a) Work out gf(-3)

(2)

hg(x) - gh(x) = k where k is an integer.

(b) Find the value of *k*.

(c) Show that $\frac{\text{fh}(x)}{\text{fg}(x)} = 2^{ax+b}$ where a and b are integers.



(Total for Question 7 is 9 marks)

