Composite Functions

SCAN ME

REVISE THIS TOPIC

CHECK YOUR ANSWERS

SCAN ME

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

1 (a) Work out $fg(x)$.
Give your answer in the form $ax + b$ where a and b are integers **[2 marks]**

$fg(x) =$ _____

1 (b) Work out of $gf(x)$
Give your answer in the form $ax + b$ where a and b are integers **[2 marks]**

$gf(x) =$ _____

1 (c) Work out $gh(x)$ **[1 mark]**

$gh(x) =$ _____

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

2 (a) Work out $fg(x)$
Fully simplify your answer. **[2 marks]**

$fg(x) =$ _____

2 (b) Work out $hg(x)$
Fully simplify your answer. **[2 marks]**

$hg(x) =$ _____

2 (c) Work out $gh(x)$
Fully simplify your answer. **[2 marks]**

$gh(x) =$ _____

Solutions

3 $f(x) = \frac{x}{4}$ $g(x) = 4x - 8$ $h(x) = \sqrt{x}$

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

[2 marks]

$fg(x) =$ _____

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

[2 marks]

$gf(x) =$ _____

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

[2 marks]

$hf(x) =$ _____

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Turn over ►

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

4 (a) Work out $fg(x)$
Fully simplify your answer. **[2 marks]**

$fg(x) =$ _____

4 (b) Work out $fg(3)$ **[2 marks]**

Answer _____

4 (c) Work out $gf(x)$
Give your answer in the form $ax^2 + bx + c$ where a, b and c are integers. **[3 marks]**

$gf(x) =$ _____

Solutions

5 $f(x) = 2x + 1$ $g(x) = \sqrt{x + 3}$

5 (a) Work out g(13) **[1 mark]**

Answer _____

5 (b) Work out fg(13) **[1 mark]**

Answer _____

5 (c) Work out gf(16) **[2 marks]**

Answer _____

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Turn over ►

Solutions

6 $f(x) = x + 2$ $g(x) = x^3$ $h(x) = \sqrt{x}$

6 (a) Work out gf(3) **[2 marks]**

Answer _____

6 (b) Work out gh(x)
Give your answer in the form x^k where k is a fraction. **[2 marks]**

gh(x) = _____

6 (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. **[3 marks]**

gf(x) = _____

Solutions

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

7 (a) Work out gf(-3) **[2 marks]**

Answer _____

7 (b) $hg(x) - gh(x) = k$ where k is an integer.
Find the value of k. **[4 marks]**

$k =$ _____

7 (c) Show that $\frac{fh(x)}{fg(x)} = 2^{ax+b}$ where a and b are integers. **[3 marks]**

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Solutions