1. Let $f(x) = 7 - 2x$ and $g(x) = x + 3$.

   (a) Find $(g \circ f)(x)$.

   (2)

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

   (1)

   (c) Find $(f \circ g^{-1})(5)$.

   (2)
   (Total 5 marks)

2. Let $f(x) = 3x$, $g(x) = 2x - 5$ and $h(x) = (f \circ g)(x)$.

   (a) Find $h(x)$.

   (2)

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

   (3)
   (Total 5 marks)

3. Let $f(x) = x^2$ and $g(x) = 2x - 3$.

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

   (2)

   (b) Find $(f \circ g)(4)$.

   (3)
   (Total 5 marks)

4. The functions f and g are defined by $f : x \mapsto 3x$, $g : x \mapsto x + 2$.

(a) Find an expression for $(f \circ g)(x)$.

(2)

(b) Find $f^{-1}(18) + g^{-1}(18)$.

(4)
(Total 6 marks)

5. Let $f(x) = 2x + 1$ and $g(x) = 3x^2 - 4$.

Find

(a) $f^{-1}(x)$;

(b) $(g \circ f)(-2)$;

(c) $(f \circ g)(x)$.

Working:

Answers:

(a) …………………………………………..
(b) …………………………………………..
(c) …………………………………………..

(Total 6 marks)

6. Consider the functions $f : x \mapsto 4(x-1)$ and $g : x \mapsto \dfrac{6-x}{2}$.

(a) Find g^{-1}.

(b) Solve the equation $(f \circ g^{-1})\,(x) = 4$.

Working:

Answers:

(a) ....

(b) ....

(Total 6 marks)

7. Two functions f, g are defined as follows:

$$f : x \rightarrow 3x + 5$$
$$g : x \rightarrow 2(1 - x)$$

Find

(a) $f^{-1}(2)$;

(b) $(g \circ f)(-4)$.

Working:

Answers:

(a) ....

(b) ....

(Total 4 marks)