Function notation

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

(a) Find $f(3)$
(b) Find $f(-2)$

2. $f(x) = 3x^2 + 10$

(a) Find $f(2)$
(b) Find $f(-1)$

Composite functions

$(\boldsymbol{f} \circ \boldsymbol{g})(\boldsymbol{x}) = \boldsymbol{f}(\boldsymbol{g}(\boldsymbol{x}))$

1. $f(x) = 3x$ and $g(x) = 2x + 1$. Find $(f \circ g)(x)$.

2. $f(x) = 2x + 1$ and $g(x) = 3x^2$. Find $(g \circ f)(x)$.

Exercise

Paper 1

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

(a) Find $f^{-1}(x)$.
(b) Find $(f \circ g)(1)$.

2. Let $f(x) = (x - 5)^3$, for x ∈ $\mathbb{R}$.

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

(b) Let g be a function so that $(f \circ g)(x) = 8x^6$. Find $g(x)$.

Paper 2

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

(a) Find $h(x)$.

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

2. Let $f(x) = 2x + 4$ and $g(x) = 7x^2$.

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

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

(c) Find $(f \circ g)(3.5)$.