

1.  $f(x) = 2x^2 + 7$  Find the value of each of these.

a.  $f(3)$

b.  $f(11)$

c.  $f(-2)$

d.  $f(30)$

e.  $f(-30)$

f.  $f(\sqrt{3})$

g. Given that  $f(k) = 57$ , find both values of  $k$ .

2.  $g(x) = 25 - x^2$  Find the value of each of these.

a.  $g(4)$

b.  $g(-8)$

c.  $g(9)$

d.  $g(-9)$

e.  $g(\sqrt{13})$

f.  $g(-0.4)$

g. Solve  $g(x) = 0$ .

3. a. Given that  $f(x) = 2x^2 + 3x$ , find the value of

i.  $f(-6)$  and ii.  $f(4)$ .

$g(x) = x^2 + 8x + 6$

b. Find the inputs for which  $f(x)$  and  $g(x)$  have the same outputs.

4. Find an expression for  $f^{-1}(x)$  for:

a.  $f(x) = 4x - 5$

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

c.  $f(x) = \frac{10}{x+1}$

d.  $f(x) = 10 - 2x$

e.  $f(x) = \frac{x-7}{6}$

f.  $f(x) = \frac{3}{x} + 5$

5. Given that  $f(x) = 10 - 3x$  and  $g(x) = \frac{x-3}{2}$ , find the value of each of the following.

a.  $fg(4)$

b.  $gf(-2)$

c.  $ff(7)$

d.  $gg(0)$

6.  $f(x) = x^3 - 6$        $g(x) = 4(x - 2)$        $h(x) = 3 - x$

a. Find simplified expressions for each of the following.

i.  $gf(x)$

ii.  $hg(x)$

iii.  $fh(x)$

7.  $f(x) = 3x + 8$        $g(x) = x^3 + 2$

a. Find a simplified expression for  $fg(x)$ .

b. Using the expression from part a, verify that  $fg(3) = 95$ .

8. Find the inverse of each function.

a.  $f(x) = px - q$

b.  $f(x) = a - x^3$