

FUNCTIONS – PRACTICE QUESTIONS



1.

f and g are functions.

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

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

(a) Find $f(3)$

(b) Find $g(-1)$

(c) Find $f(5) - g(1)$

(d) Find $\frac{g(3)}{f(2)}$

2.

a and b are functions.

$$a(x) = 2x - 4$$

$$b(x) = 4x$$

(a) Find $a(-1)$

(b) Find $b(2) \times a(1)$

(c) Find $bb(1)$

(d) Find $ab(3)$

3.

c and d are functions.

$$c(x) = \frac{x}{2}$$

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

(a) Find $c(4) + d(4)$

(b) Find $cd(3)$

(c) Solve $d(x) = 26$

4.

e and f are functions.

$$e(x) = 3x$$

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

(a) Find $ef(x)$

(b) Find $fe(x)$

(c) Find $ef(2) + fe(5)$

5.

g and h are functions.

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

$$h(x) = x + 5$$

(a) Find $gh(x)$

(b) Find $hg(x)$

(c) Find $hh(x)$

6.

i and j are functions.

$$i(x) = 3x + 10$$

$$j(x) = 2x - 5$$

(a) Find $ij(x)$

(b) Find $ji(x)$

(c) Solve $ji(x) = 45$.

7.

k and l are functions.

$$k(x) = 4x$$

$$l(x) = \frac{3x-1}{2}$$

(a) Find $lk(x)$

(b) Find $kl(x)$

(c) Solve $kk(x) = 64$.

8.

m , n and o are functions.

$$m(x) = 5x + 1$$

$$n(x) = \frac{x}{3}$$

$$o(x) = 2x - 9$$

(a) Find $m^{-1}(x)$

(b) Find $n^{-1}(x)$

(c) Find $o^{-1}(x)$

9.

p , q and r are functions.

$$p(x) = 6x - 1$$

$$q(x) = 3x$$

$$r(x) = x^2 + 10$$

(a) Find $p^{-1}(x)$

(b) Find $q^{-1}(x)$

(c) Find $r^{-1}(x)$

10.

t , u and v are functions.

$$t(x) = \frac{x+3}{2}$$

$$u(x) = 3x^3$$

$$v(x) = \frac{3x-2}{5}$$

(a) Find $t^{-1}(x)$

(b) Find $u^{-1}(x)$

(c) Find $v^{-1}(x)$

11.

a, b and c are functions.

$$a(x) = 4x + 1$$

$$b(x) = 2x^2 - 1$$

$$c(x) = \frac{5x}{4}$$

(a) Find $c(12)$

(b) Solve $a(x) = 37$

(c) Find $ac(x)$

(d) Find $b^{-1}(x)$

12.

d, e and f are functions.

$$d(x) = \frac{x^2 + 5}{3}$$

$$e(x) = \sqrt{x + 1}$$

$$f(x) = 3x - 10$$

(a) Find $fe(35)$

(b) Find $d^{-1}(x)$

(c) Find $e^{-1}(x)$

13.

g , h and i are functions.

$$g(x) = 3x + 4$$

$$h(x) = x^2 - 10$$

$$i(x) = 2x^2 + 5x - 4$$

(a) Find $hg(x)$. Express your answer in the form $ax^2 + bx + c$.

(b) Solve $i(x) = h(x)$

14.

j and k are functions.

$$j(x) = \sqrt{x} + 4$$

$$k(x) = x^2 + 6x + 9$$

(a) Show that $k(x + 2) - k(x) = 4x + 16$.

(b) Solve $jk(x) = 10$

15.

m, n and o are functions.

$$m(x) = \sqrt{\frac{x}{2}}$$

$$n(x) = 5x^2 - 48$$

$$o(x) = 18x^6$$

(a) Solve $m^{-1}(x) = n(x)$

(b) Show that $mo(x) = 3x^3$

16.

p, q and r are functions.

$$p(x) = \frac{x}{x+1}$$

$$q(x) = x^2 + 2x - 3$$

(a) Find $p^{-1}(x)$

(b) Solve $q(x + 2) = 0$

17.

f and g are functions.

$$f(x) = ax^2 + b$$

$$g(x) = bx$$

Given that $f(2) = 14$ and $g(4) = 8$, show that $gf(1) = 10$.

18.

h and i are functions.

$$h(x) = \sqrt{\frac{3x+1}{4}}$$

$$i(x) = 4x^2$$

(a) Find $h^{-1}(x)$

(b) Solve $ih(x) = 19$

19.

j and k are functions.

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

$$k(x) = 2 + x$$

Solve $jk(x) = kj(x)$.

20.

m and n are functions.

$$m(x) = \sqrt{ax + b}$$

$$n(x) = \frac{ax+1}{3}$$

Given that $m^{-1}(4) = 3$ and $n^{-1}(3) = 2$, find $mn(2)$.