



1. $f(x) = 12 - 5x$, find

(a) $f(2)$

(b) $f(-3)$

(c) $f(0)$

(d) $f(3) + f(-5)$

2. $g(x) = 5x - 9$, find

(a) $g(0) + g(-3)$

(b) $g(\frac{3}{5})$

(c) $g(\frac{4}{5}) - g(-\frac{1}{5})$

3. $f(x) = \frac{x}{4} + 5$ and $g(x) = \frac{2}{5}x - 1$

(a) find

$$4f(-3) - 7g(0)$$

(b) Solve

$$(i) f(x) = 6$$

$$(ii) f(x) = g(x)$$



4. $f(x) = 4x - 3$ and $g(x) = 8 - 3x$, find

(a) $g(x) = 20$

(b) $g(x) = x$

(c) $f(x) = -2x$

(d) $f(x) = g(x)$

5. $f(x) = 3x + 2$ and $g(x) = x^2$, find

(a) $f(2)$

(b) $f(d)$

(c) $f(a + 1)$

(d) $g(a + 1)$

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6. $f(x) = 10x - 3$ and $g(x) = \frac{3}{4}x + 2$, find in terms of a

(a) $g(8a + 1)$

(b) $f\left(\frac{1}{2}a\right) + g(2a - 4)$

7. $f(x) = 8 - 3x$ and $g(x) = x^2 + 6$, find

(a) $g(2)$

(b) $fg(2)$

(c) $gf(1)$

(d) $fg(x)$

(e) $gf(x)$

(f) $ff(x)$ (or $f^2(x)$)

(g) $gg(x)$ (or $g^2(x)$)

(h) $(f(x))^2$

(i) $(g(x))^2$



8. $f(x) = x^2 + 3x$ and $g(x) = x + 1$, solve

(a) $fg(x) = 0$

(b) $gf(x) = 0$ [Give answer in surd form]

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

(a) $f(x) = 5x + 4$

(b) $f(x) = 7x - 4$

(c) $f(x) = \frac{x}{x-2}$ also find $f^{-1}(2)$

(d) $f(x) = \frac{2}{x-5}$ also find $f^{-1}(1)$



10. Given $f(x) = \frac{4}{x+9}$ find $f^{-1}(2)$

11. Find

(a) $ff^{-1}(x)$

(b) $gg^{-1}(2)$

12. Given $h(x) = 2^x$, find

(a) $h(5)$

(b) $h^{-1}(8)$

(c) $h^{-1}(x) = 4$

13. $g(x) = 3^x$

(a) $g(2)$

(b) $g^{-1}(27)$

(c) $g^{-1}(x) = 0$

(d) $gg^{-1}(259)$



14. Given $f(x) = 2x - 1$ $g(x) = 1/x, x \neq 0$ $h(x) = 2^x$

Use two of the functions $f(x)$, $g(x)$ and $h(x)$ to find the composite function which is equal to

(a) $\frac{1}{2^x}$ [1]

(b) $\frac{2}{x} - 1$ [1]

(c) $\frac{2^{2x}}{2}$ [1]

Answers

Q1) (a) 2 (b) 27 (c) 12 (d) 34

Q2) (a) -33 (b) -6 (c) 5

Q3) (a) 24 (b) (i) 4 (ii) 40

Q4) (a) -4 (b) 2 (c) $\frac{1}{2}$ (d) $1\frac{4}{7}$

Q5) (a) 8 (b) $3d+2$ (c) $3a+5$ (d) $(a+1)^2$

Q6) (a) $6a + 2\frac{3}{4}$ (b) $6\frac{1}{2}a - 4$

Q7) (a) 10 (b) -22 (c) 31 (d) $-3x^2 - 10$ (e) $9x^2 - 48x + 70$ (f) $9x - 16$ (g) $x^4 + 12x^2 + 42$
(h) $9x^2 - 48x + 64$ (i) $x^4 + 12x^2 + 36$

Q8) (a) $x = -1, x = -4$ (b) $x = \frac{-3+\sqrt{5}}{5}$ and $x = \frac{-3-\sqrt{5}}{5}$

Q9) (a) $\frac{x-4}{5}$ (b) $\frac{x+4}{7}$ (c) $\frac{2x}{x-1}$ and 4 (d) $\frac{2+5x}{x}$ and 7

Q10) -7

Q11) (a) x (b) 2

Q12) (a) 32 (b) $x = 3$ (c) $x = 16$

Q13) (a) 9 (b) $x = 3$ (c) 1 (d) 259

Q14) (a) $gh(x)$ (b) $fg(x)$ (c) $hf(x)$