

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

$(i) f(x) = 6$

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

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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) $(g(x))^2$

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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 $f^{-1}(1)$

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

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14. Given $\mathrm{f}(x) = 2x - 1$ $\mathrm{g}(x) = 1/x, x \neq 0$ $\mathrm{h}(x) = 2^x$
Use two of the functions $\mathrm{f}(x), \mathrm{g}(x)$ and $\mathrm{h}(x)$ 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)

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