

Unit 2 (2.6) Compositions and Inverses – Practice

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

$$b(x) = 3x - 1$$

$$c(x) = \sqrt{2x + 5}$$

$$d(x) = \frac{x^2 - 5}{9}$$

$$e(x) = \frac{x+8}{2}$$

$$f(x) = \sqrt{\frac{x+1}{2}} - 3$$

$$g(x) = \frac{4}{5}x - 20$$

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

Find:

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

2. $b^{-1}(x)$

3. $c^{-1}(x)$

4. $d^{-1}(x)$

5. $e^{-1}(x)$

6. $f^{-1}(x)$

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

$$b(x) = 3x - 1$$

$$c(x) = \sqrt{2x + 5}$$

$$d(x) = \frac{x^2 - 5}{9}$$

$$e(x) = \frac{x+8}{2}$$

$$f(x) = \sqrt{\frac{x+1}{2}} - 3$$

$$g(x) = \frac{4}{5}x - 20$$

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

7. $g^{-1}(x)$

8. $h^{-1}(x)$

9. $h(f(1))$

10. $g(e(-18))$

11. $d(a(30))$

12. $b(c(22))$

$$f(x) = 4x - x^2$$

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

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

13. $f(g(x))$

14. $h(f(x))$

15. $h(h(x))$

Prove the following are inverses by using compositions.

16. $v(x) = \frac{2}{3}x - 6$ and $w(x) = \frac{3}{2}x + 9$

17. $j(x) = 7(x - 1)^2$ and $k(x) = \sqrt{\frac{x}{7}} + 1$

18. $f(x) = 2x^2 - 3$ and $g(x) = \sqrt{\frac{x+3}{2}}$

19. $a(x) = 2\sqrt{x-7} + 4$ and $b(x) = \left(\frac{x-4}{2}\right)^2 + 7$