

Key

Algebra 2 6.6-6.8 Review

1. Let $f(x) = x - 4$ and $g(x) = x^2 - 16$. Perform each function operation:

a. $f(x) + g(x)$

$$x - 4 + x^2 - 16$$

$$\boxed{x^2 + x - 20}$$

c. $f(x) \cdot g(x)$

$$(x - 4)(x^2 - 16)$$

$$\boxed{x^3 - 4x^2 - 16x + 64}$$

b. $g(x) - f(x)$

$$x^2 - 16 - (x - 4)$$

$$x^2 - 16 - x + 4$$

$$\boxed{x^2 - x - 12}$$

d. $\frac{g(x)}{f(x)}$

$$\frac{x^2 - 16}{x - 4} = \frac{(x - 4)(x + 4)}{x - 4} = \boxed{x + 4}$$

2. Let $g(x) = 5x - 2$ and $h(x) = x^2 + 1$. Find the value of each:

a. $(h \circ g)(-1) = h(g(-1))$

#1 $5(-1) - 2 = -7$

#2 $(-7)^2 + 1 = \boxed{50}$

b. $h(g(0))$

1 $5(0) - 2 = -2$

2 $(-2)^2 + 1 = \boxed{5}$

c. $g(h(2))$

1 $2^2 + 1 = 5$

2 $5(5) - 2 = \boxed{23}$

d. $(g \circ h)(a) = g(h(a))$

1 $a^2 + 1$

2 $5(a^2 + 1) - 2$

$$5a^2 + 5 - 2 = \boxed{5a^2 + 3}$$

3. A grocery store is offering a 50% discount off a \$4 box of cereal. You also have a \$1 off coupon for the same cereal. Use a **composite function** to show whether it is better to use the coupon before or after the discount.

$$g(x) = .5x$$

$$f(x) = x - 1$$

***Use coupon after the discount**

1 $g(f(x)) = 4 - 1 = 3$

2 ~~4~~ $3 \times .5 = 1.50$

1 $f(g(x)) = .5(4) = 2$

2 $2 - 1 = 1$

$$X + .07X$$

4. A car manufacturer offers a \$2000 rebate, but the buyer must pay the 7% sales tax on the full price of the car. Write a composite function to represent the cost to purchase a car listed for x dollars.

$$f(x) = 1.07x$$

$$g(x) = x - 2,000$$

$$g(f(x))$$

$$g(1.07x)$$

$$g(f(x)) = 1.07x - 2,000$$

Find the inverse of each function.

5. $f(x) = 2x^2 - 8$

$$x = 2y^2 - 8$$

$$\frac{x+8}{2} = y^2$$

$$y = \pm \sqrt{\frac{x+8}{2}}$$

6. $f(x) = 15 - 3x$

$$x = 15 - 3y$$

$$\frac{x-15}{-3} = \frac{-3y}{-3}$$

$$y = \frac{-x+15}{3} \text{ or } y = \frac{1}{3}x + 5$$

7. $f(x) = \sqrt{x-3}$

$$x^2 = y - 3$$

$$x^2 + 3 = y$$

$$y = x^2 + 3$$

8. $f(x) = 6 - 5x^2$

$$x = 6 - 5y^2$$

$$\frac{x-6}{-5} = \frac{-5y^2}{-5}$$

$$y = \pm \sqrt{\frac{-x+6}{5}}$$

9. Graph the function in number 6 and graph its inverse.

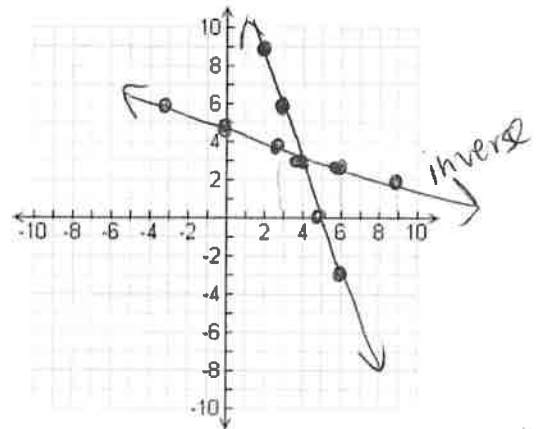
X	Y
2	9
3	6
4	3
5	0
6	-3

$$y = -3x + 15$$

$$y = \frac{1}{3}x + 5$$

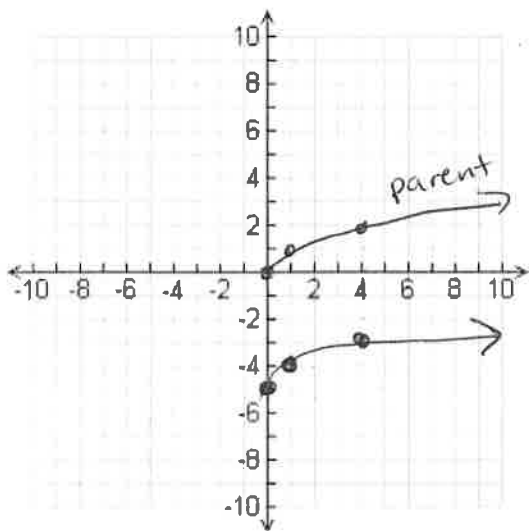
(inverse)

x	Y
9	2
6	3
3	4
0	5
-3	6

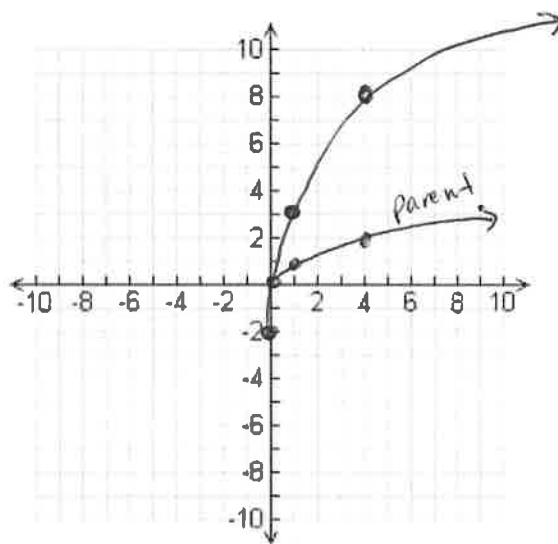


Graph each function using transformations of the parent function.

10. $y = \sqrt{x} - 5$



11. $y = 5\sqrt{x} - 2$



12. $y = -\sqrt{x-4}$

