

1. Describe the transformations.

a. $y = -\frac{3}{4}\sqrt{x} - 9$

V.D. $\frac{3}{4}$ (narrow)V.T. -9 (down)

Reflection (flip)

b. $y = 2(x - 4)^2 + 15$

H.T. 4 (right)

V.T. 15 (up)

V.D. 2 (narrow)

2. Find the value of each, if
- $f(x) = 2x^2 - x + 4$
- and
- $g(x) = x - 2$
- and
- $h(x) = -4x^2$

a. $g(f(3)) = 17$

b. $h(g(x)) = -4x^2 + 16x - 16$

3. Use the relation graphed to the right to answer the following questions:

- a. Is the relation a function?

yes

- b. State the domain for the relation.

 $(-\infty, 7]$

- c. State the range for the relation.

 $(-\infty, 7]$

- d. Graph the relation's inverse.



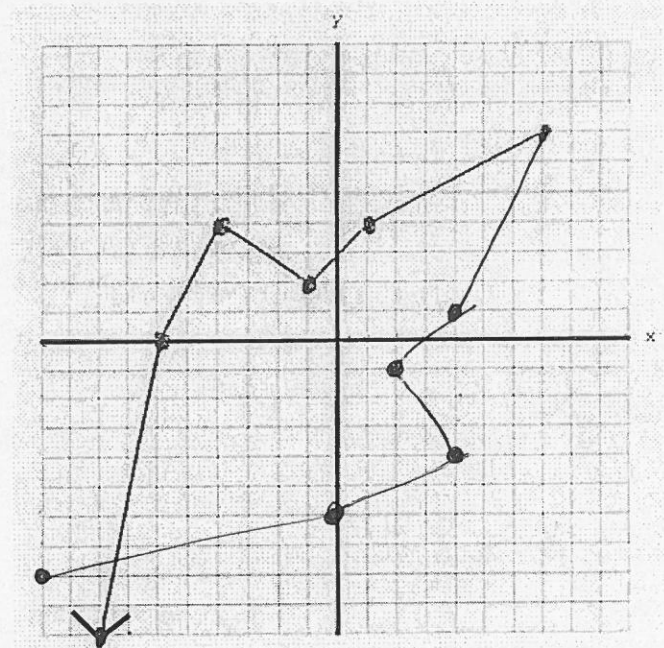
- e. Is the inverse a function?

NO

- f. State the domain for the inverse.

 $(-\infty, 7]$

- g. State the range for the inverse.

 $(-\infty, 7]$ 

4. Simplify.

a. $(7 - 3i)(4i + 1)$

$$19 + 25i$$

b. $\sqrt{-288}$

$$12i\sqrt{2}$$

5. Prove the following equation has exactly one solution.

$$\sqrt{-3x + 10} = x$$

$$x = -5, x = 2$$

Check answers to figure out which one doesn't work

6. I have a 4 by 9 by 14 inch box. I would like to increase each side by the same amount so that the new volume is 168 more than 7 times the original.

a. By how much do you need to increase each side? 7 inches

b. What are the new dimensions?

$$11 \times 16 \times 21$$

7. Given the transformations, write the equations:

a. Quadratic

Vertical Dilation: 6

Horizontal Translation: -4

Reflection

$$\text{Equation: } y = -6(x+4)^2$$

b. Radical

Vertical Translation: -11

Vertical Dilation: 4/3

Horizontal Translation: 5

$$\text{Equation: } y = \frac{4}{3}\sqrt{x-5} - 11$$

8. Solve.

a. $\ln(6x + 1) = 4$

$$x \approx 8.93$$

b. $\log_{11}5x - \log_{11}4 = \log_{11}10$

$$x = 8$$

c. The car I bought for \$32,000 is losing 3% of its value every year. When will it be worth \$25,000?

$$t \approx 8.105$$