

Practice Test 2
Transformations

Every function on this test will be a transformation of either x^2 , \sqrt{x} , 2^x , $|x|$, or x .

For questions 1-4, list the parent function and all transformations.

1. $y = -(x + 3)^2$

Parent function: _____

Shifts: _____

Reflections: _____

Stretches/Shrinks: _____

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

Parent function: _____

Shifts: _____

Reflections: _____

Stretches/Shrinks: _____

3. $y = -2^{x+1}$

Parent function: _____

Shifts: _____

Reflections: _____

Stretches/Shrinks: _____

4. $y = \frac{1}{2}|-x + 1| - 7.2$

Parent function: _____

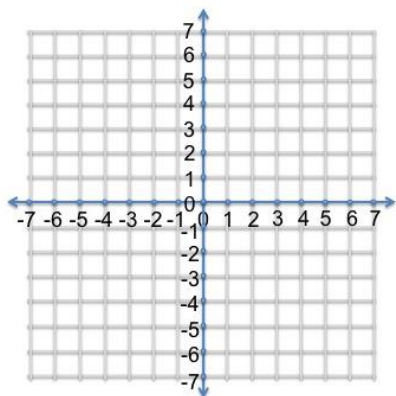
Shifts: _____

Reflections: _____

Stretches/Shrinks: _____

5. In the equation $y^2 = x$, is y a function of x ? Explain.

6. Let $f(x) = |x|$. Graph $y = f(x)$ on the coordinate plane below and state the domain and range of f .



Domain:

Range:

7. Now let $g(x) = |x + 3| - 12$.

a) How would the graph of g be different from the graph of f ? (You don't have to graph it, just say how we have transformed f .)

b) What is the domain and range of g . (Again, don't graph, just use your answers from 6 and 7a to help you.)

For questions 8-10, put each linear function in slope-intercept form.

8. $3x + y = x + 1$

9. $y + 1 = \frac{2}{3}(x - 3)$

10. $4x - 2y = 7$

For questions 11-14, let $f(x) = 5^x$. Write an equation that would transform f in the manners described.

11. Down 6

$y =$

12. Right 5 and horizontal reflection

$y =$

13. Vertical reflection and vertical shrink by $\frac{1}{2}$.

$y =$

14. Vertical reflection, left 6, and up 4.8

$y =$

15. Beginning at the top of mount Shasta, a professional skier begins sliding down the slopes at a rate of 50 meters per second. After 20 seconds, her elevation is 3,300 meters.

a) Write an equation in point-slope form that gives elevation (y) as a function of time (x).

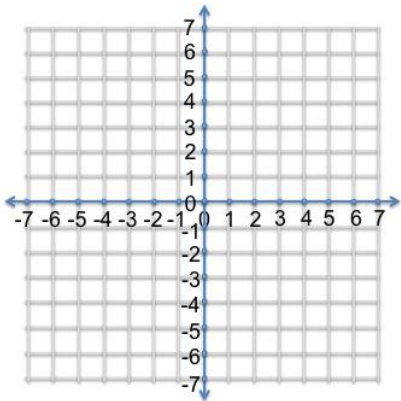
b) Put your equation from part a in slope-intercept form.

c) What is the y -intercept of the line representing this situation? Write one sentence explaining what the y -intercept means in the context of this problem.

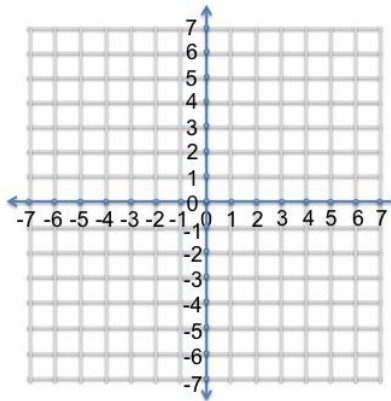
d) What is the x -intercept of the line representing this situation? Write one sentence explaining what the x -intercept means in the context of this problem.

For questions 16 and 17, draw a function that has the given domain and range.

16. Domain: $(-\infty, \infty)$
Range: $[0, \infty)$



17. Domain: $\{-2\}$
Range: $(0, 4]$



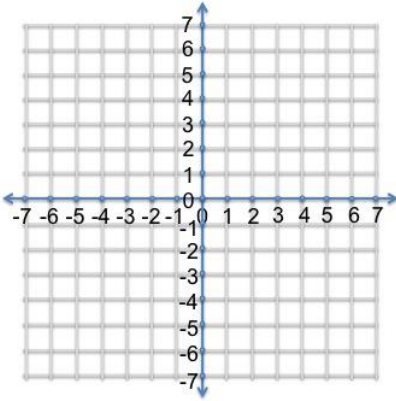
18. What are the domain and range of the function $y = 2^x$?

19. What are the domain and range of the function $y = 2^{x+3} - 7$?

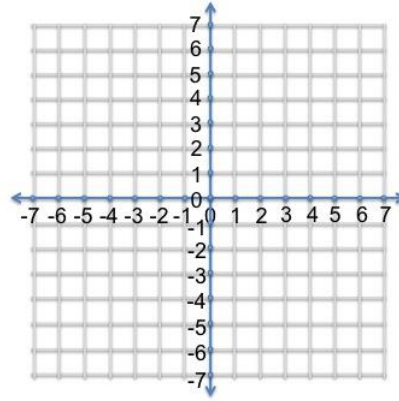
20. What are the domain and range of the function $y = -2^x$?

What functions are drawn in each of the coordinate planes below?

21. $y =$



22. $y =$



Graph and label each function below.

23. $f(x) = -(x + 11)^2$

24. $g(x) = 4x - 7$

25. $h(x) = -\frac{1}{2} \cdot 2^{x+6}$

