

Algebra 2 H
Shifts, Reflects, Stretches

Name:

I. Identify the parent function, and then describe how it is transformed (be specific about shifts, reflections, stretches, or shrinks).

a. $y = -x^2$

parent: x^2

Reflect across
x-axis

d. $y = (x + 3)^2 - 4$

parent: x^2

left 3
down 4

g. $y = (6x)^2$

parent: x^2

shrink h.
b.a.f.o. 1/6

j. $y = 2^{4x}$

parent: 2^x

Shrink H.
b.a.f.o. 1/4

b. $y = 4|x|$

parent: $|x|$

Stretch v.
b.a.f.o. 4

e. $y = \frac{1}{3}x^3$

parent: x^3

Shrink v
b.a.f.o. 1/3

h. $y = (-x)^3$

parent: x^3

Reflect across
y-axis

k. $y = \frac{1}{4}|x|$

parent: $|x|$

Stretch H
b.a.f.o. 4

c. $y = \sqrt{x-9}$

parent: \sqrt{x}

right 9

f. $y = |x + 2| - 1$

parent $|x|$

left 2
down 1

i. $y = \frac{1}{5}\sqrt{x}$

parent \sqrt{x}

shrink v
b.a.f.o. 1/5

l. $y = 3\sqrt{x}$

parent \sqrt{x}

stretch v.
b.a.f.o. 3

II. Write an equation based on the transformation described.

a. $y = \sqrt{x}$ is shifted 6 to the left

$$y = \sqrt{x+6}$$

b. $y = x^3$ is shifted up 4 units and to the right 1 unit

$$y = (x-1)^3 + 4$$

c. $y = x^2$ is reflected across the y-axis and up 10

$$y = (-x)^2 + 10$$

d. $y = |x|$ is stretched vertically b.a.f.o. 5

$$y = 5|x|$$

e. $y = |x|$ is shrunk horizontally b.a.f.o. 1/2

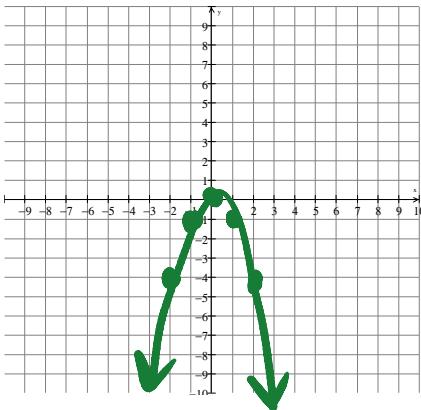
$$y = |2x|$$

f. $y = \sqrt{x}$ is shrunk vertically b.a.f.o. 1/3

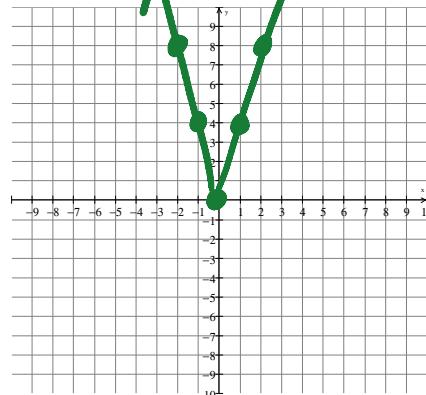
$$y = \frac{1}{3}\sqrt{x}$$

II. Graph the equations below.

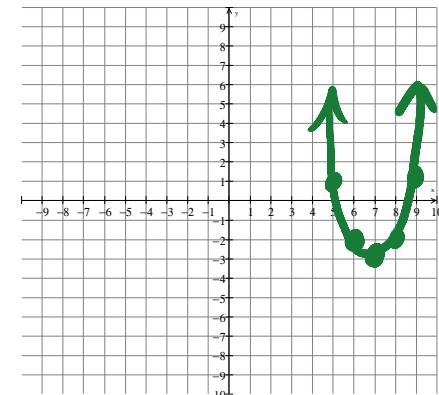
a. $y = -x^2$



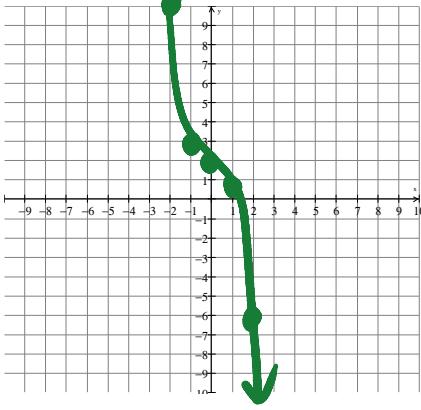
b. $y = 4|x|$



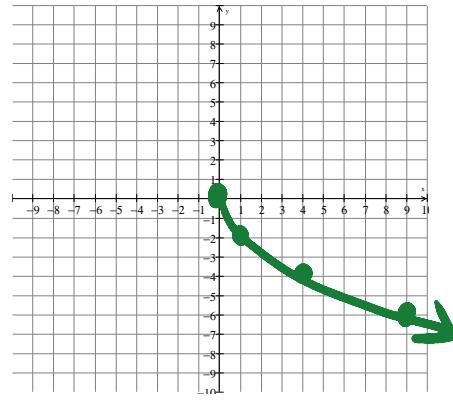
c. $y = (x - 7)^2 - 2$



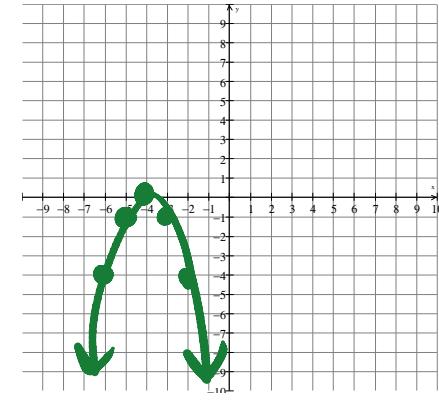
c. $y = (-x)^2 + 2$



d. $y = -2\sqrt{x}$

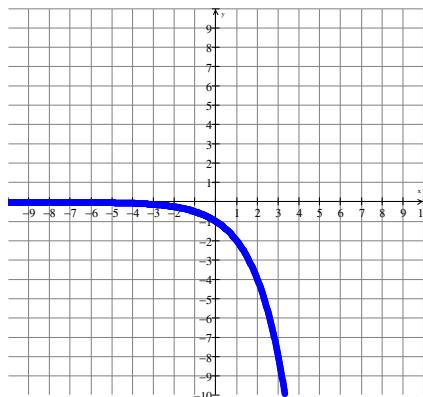


e. $y = -(x + 4)^2$



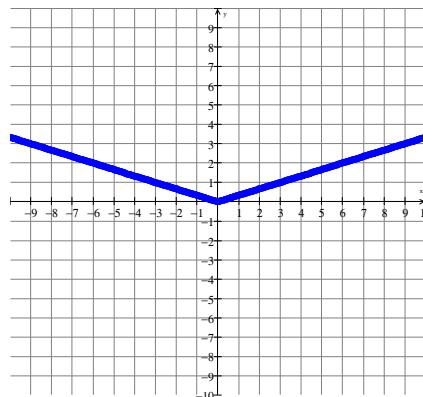
IV. Write an equation for the graphs below. Think of the parent function first!

a.



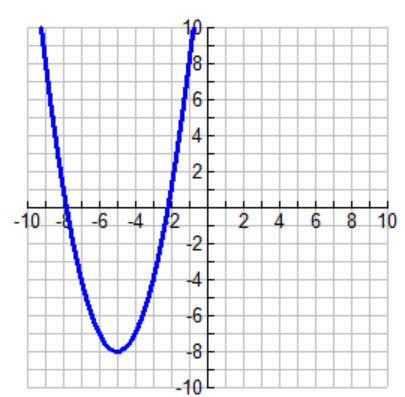
$$y = -2^x$$

b.



$$y = \frac{1}{3}|x| = |\frac{1}{3}x|$$

c.



$$y = (x + 5)^2 - 8$$