

Multiple transformations day 2

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

a. $y = \frac{1}{4}\sqrt{x}$

parent: \sqrt{x}
shrink v. b.a.f.o. 1/4

b. $y = -3|x|$

parent: $|x|$
stretch v. b.a.f.o. 3
reflect across x-axis

c. $y = -\sqrt{x+8}$

parent: \sqrt{x}
left + 8
reflect across x-axis

d. $y = (x+6)^2$

parent: x^2
left + 6

e. $y = (-x+6)^2$

parent: x^2
① left + 6
② reflect across y-axis

f. $y = 2^{x+4} + 9$

parent: 2^x
left + 4
up 9

g. $y = -2|x| + 4$

parent: $|x|$
① stretch v. b.a.f.o. 2
reflect across x-axis
③ up 4

h. $y = 3\sqrt{-x}$

parent: \sqrt{x}
stretch v. b.a.f.o. 3
reflect across y-axis

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

parent: x^3
① left + 4
② reflect across y-axis

j. $y = -|x-4| + 5$

parent: $|x|$
right 4
① reflect across x-axis
② up 5

k. $y = \sqrt{2x}$

parent: \sqrt{x}
shrink h.
b.a.f.o. 1/2

l. $y = 2^{\frac{1}{5}x}$

parent: 2^x
stretch h.
b.a.f.o. 5

II. Write an equation based on the transformation described.

a. $y = \sqrt{x}$ reflected across the y-axis and then up 17 units

$$y = \sqrt{-x} + 17$$

b. $y = x^3$ is reflected across the x-axis and then to the right 3 units

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

c. $y = |x|$ is shrunk vertically b.a.f.o. 1/3, then up 7 units, then reflected across the x-axis

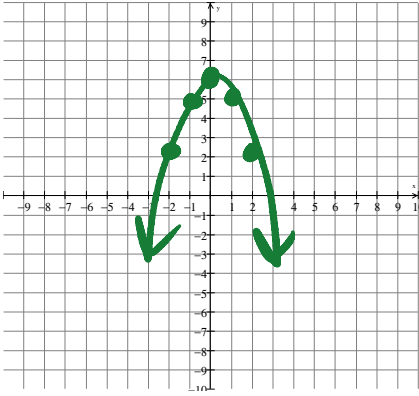
$$y = -\left(\frac{1}{3}|x| + 7\right)$$

d. $y = \sqrt{x}$ is shifted right 6 units, then reflected across the y-axis

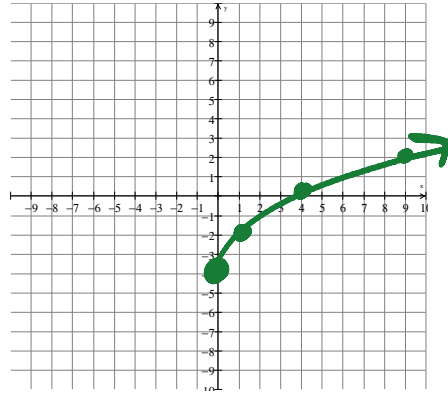
$$y = \sqrt{-x-6}$$

III. Graph the equations below.

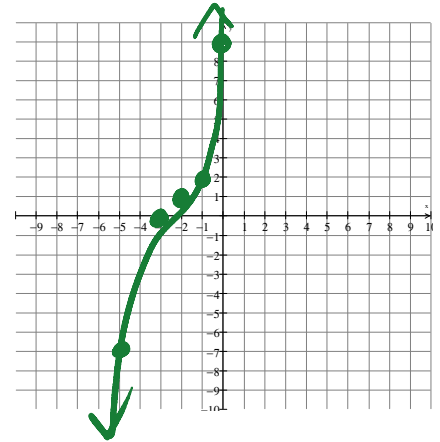
a. $y = -x^2 + 6$



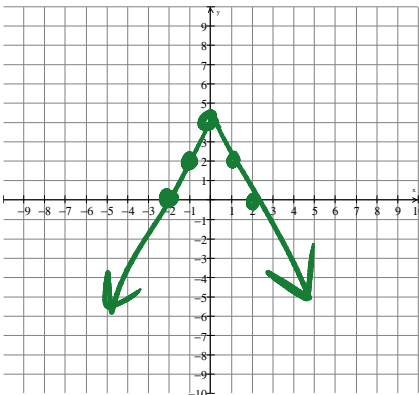
b. $y = 2\sqrt{x} - 4$



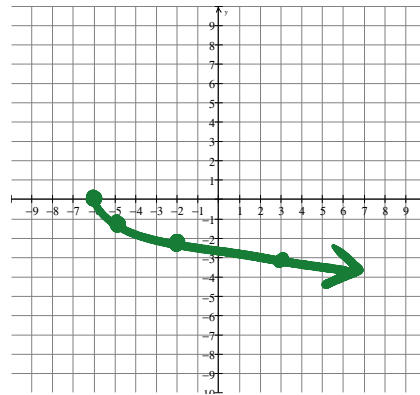
c. $y = (x+2)^3 + 1$



c. $y = -2|x| + 4$



d. $y = -\sqrt{x+6}$



e. $y = -(x+5)^2 - 4$

