

ALEGRBA RH

Essential Question: How do we identify and write equations of a transformed function?

Do Now:

If a quadratic function, (x) , has a turning point at $(4, -5)$, and $g(x) = f(x - 3) + 2$, then where does $g(x)$ have a turning point?

Today our focus is going to be on identifying and writing the equations of transformed functions.

I. Identify the needed information from the equation of the transformed function.

a. $g(x) = -x^2 - 1$

Name _____

Transformations _____

b. $f(x) = 2|x + 3|$

Name _____

Transformations _____

c. $h(x) = \frac{1}{3}\sqrt{x - 2} + 8$

Name _____

Transformations _____

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

Name _____

Transformations _____

e. $g(x) = -5\sqrt[3]{x}$

Name _____

Transformations _____

* Put in VERTEX form first*

f. $h(x) = x^2 - 6x + 4$

Name _____

Transformations _____

g. $f(x) = -5x^2 - 20x - 3$

Name _____

Transformations _____

II. Write an equation of a function given the name and transformations

- a. Quadratic: Vertically compressed by a factor of $\frac{2}{3}$, translated 5 units left and 6 units up

- b. Absolute Value: Vertical shift up 5, horizontal shift 6 units left

- c. Square Root: Translate 9 units right and reflected over the x-axis

- d. Cubic: Vertically compressed by a factor of 0.45 and shifted 9 units down

- e. Cube Root: Vertically stretched by a factor of 2, reflected over the x-axis and shifted 3 units left

- f. Quadratic (**in standard form**): Vertically stretched by a factor of 4, reflected over the x-axis, translated 9 units up and 6 units left

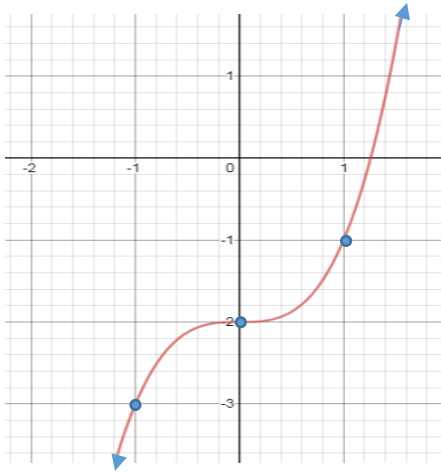
III. Write an equation of a new function given a **NON PARENT** function

- a. Given $y = \sqrt{x - 2} + 6$: Shift is 7 units down and reflect it over the x-axis

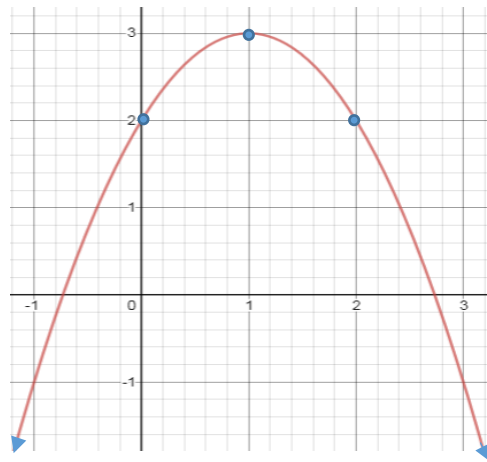
- b. Given $y = -2|x + 9|$: Shift it 3 units left, 2 units down and reflect it over the x-axis

IV. Write an equation given the graph of the transformed function (Don't forget the "a" value)

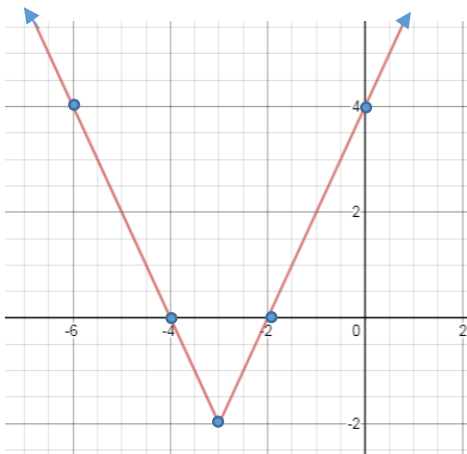
a.



b.



c.



d.

