

2-2 Transformations of Functions

Objectives:

2-2a: I can identify transformations from an equation and from a graph.

2-2b: I can identify attributes of transformed functions.

May 27-8:44 AM

$$y = a(x-h) + k$$

	<u>Vertical</u> (Range)	Horizontal (Domain)
Shift <i>+/-</i>	<i>k</i>	<i>h</i>
Stretch <i>mult.</i>	<i>a</i>	-----
Reflection <i>flip</i>	<i>-a</i>	-----

Domain changes

Range changes

Aug 11-8:51 AM

Information to remember about transformations....

x's lie

any change to the domain (x's) is opposite of what appears in the equation

Aug 11-8:52 AM

State the parent function and the transformations.

$$f(x) = 3x + 7$$

$$f(x) = (x + 3)^3$$

Parent Function:

$$f(x) = x \text{ linear}$$

Parent Function:

$$f(x) = x^3 \text{ cubic}$$

Transformations:

- Vert. str. of 3
- up 7

Transformations:

$$\text{left } 3$$

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$$f(x) = |x+2| - 1$$

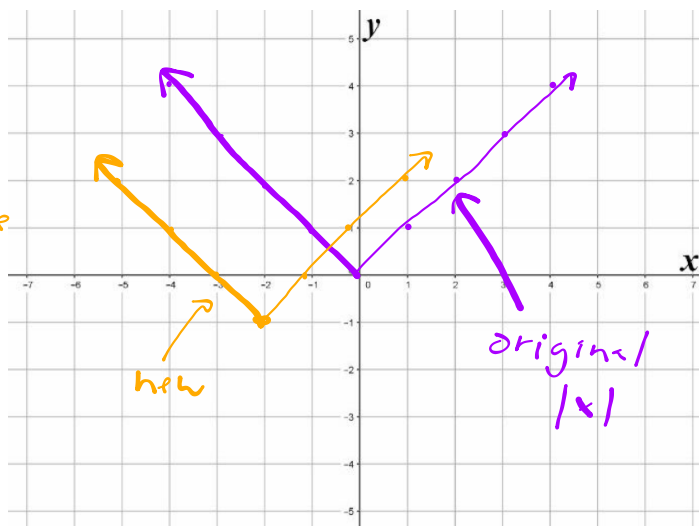
Parent Function:

$$f(x) = |x| \quad \begin{array}{l} \text{absolute} \\ \text{value} \end{array}$$

Transformations:

left 2

down 1



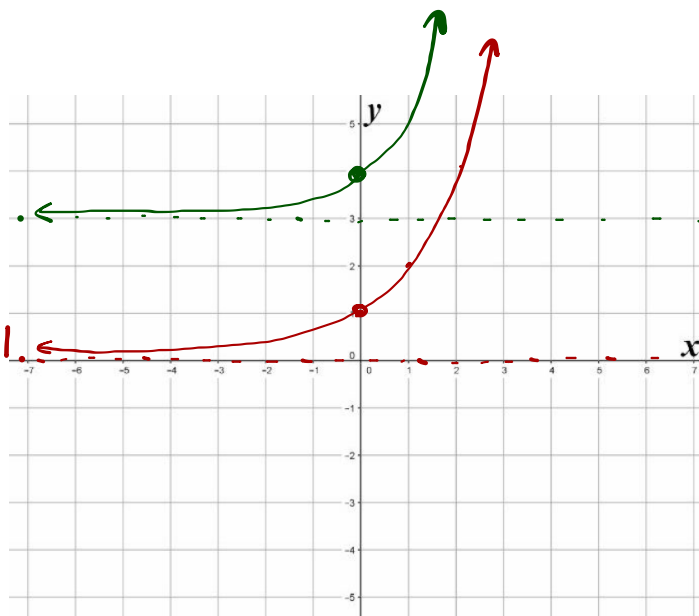
$$f(x) = 2^x + 3$$

Parent Function:

$$f(x) = 2^x \quad \text{exponential}$$

Transformations:

up 3



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

Parent Function:

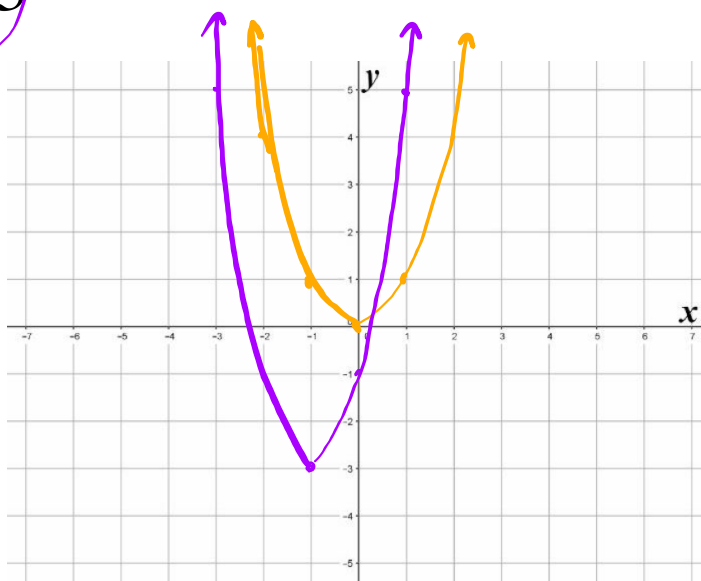
$$f(x) = x^2 \text{ quadratic}$$

Transformations:

vert stretch of 2

left 1

down 3



$$f(x) = (x+4)^3 - 3$$

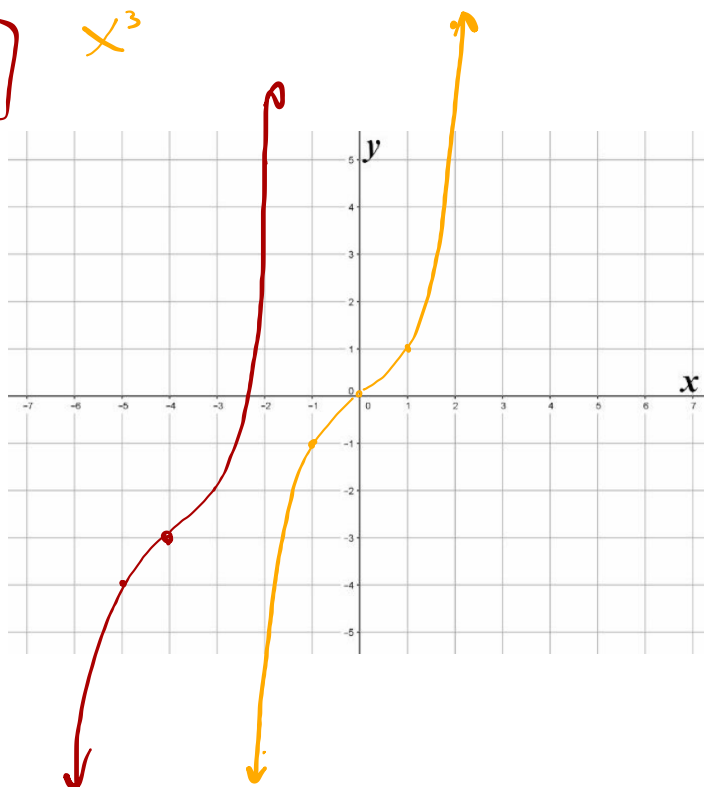
Parent Function:

$$f(x) = x^3 \text{ cubic}$$

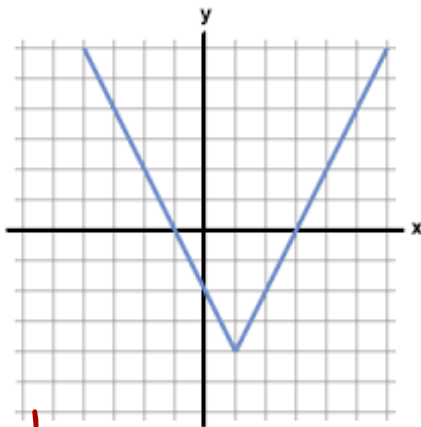
Transformations:

left 4

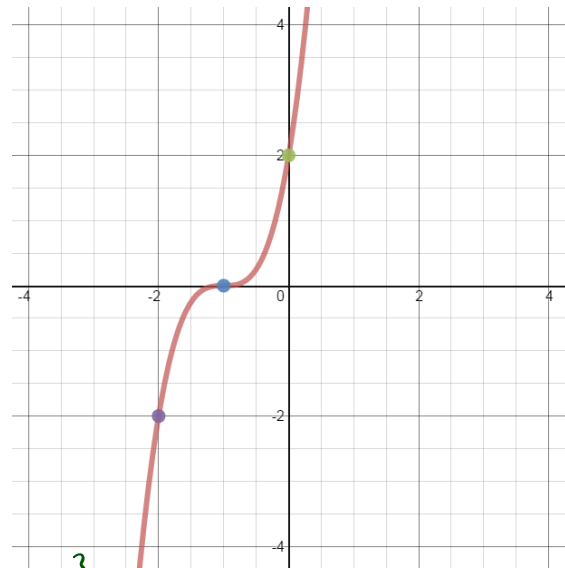
down 3



State the parent function and the transformations.



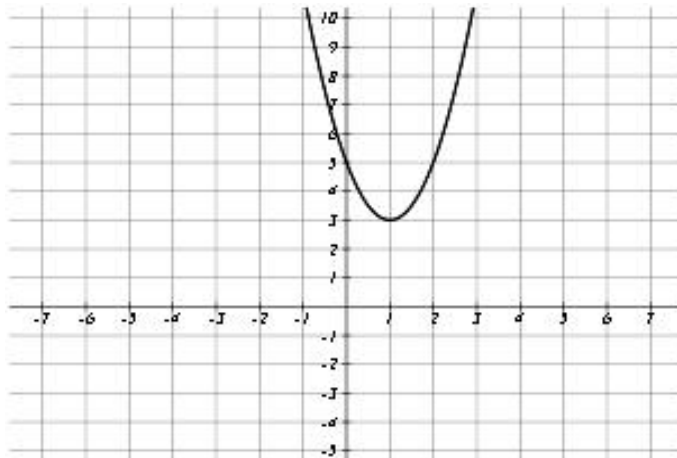
$|x|$, right 1, down 4



x^3 , left 1, down 2

Jul 27-8:49 AM

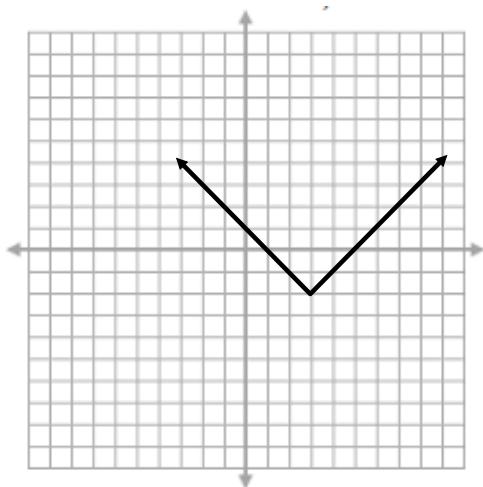
State the parent function and identify the transformations.



x^2
right 1
up 3
vert. str. of 2

Aug 14-4:18 PM

State the parent function, transformations, and attributes of the graph.



Parent Function: $f(x) = |x|$

Transformations: right 3, down 2

Domain: $(-\infty, \infty)$

Range: $[-2, \infty)$

Increasing: $(3, \infty)$

Decreasing: $(-\infty, 3)$

Left End Behavior:

$$x \rightarrow -\infty, y \rightarrow \infty$$

Right End Behavior:

$$x \rightarrow \infty, y \rightarrow \infty$$

Sep 19-7:28 AM