1-2 Transformations

Objectives:

- I can identify transformation from an equation and graph

- I can graph a transformed parent function

Domain changes
Range changes

$y = \pm a f(\pm b(x \pm h)) \pm k$

	Vertical	Horizontal
Shift (+ or −)	$f(x) \pm k$	$f(x \pm h)$
Stretch/Compress (+)	$af(x)$	~~$f(bx)$~~
Reflection (−)	$-f(x)$	$f(-x)$
	over x	over y

*Teacher note: desmos.com

Information to remember about transformations....

ex's lie

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

Ex. 1 State the transformations: $y=\sqrt{x}$

$f(x)=\sqrt{x}-2$

down 2

$f(x)=\sqrt{x+3}$

left 3

$f(x)=2\sqrt{x}$

STRETCH by 2

$f(x)=\frac{1}{3}\sqrt{x}$

COMPRESS by 3

$f(x)=-\sqrt{x}$

Reflect over

$f(x)=\sqrt{-x}$

Reflect over y

$f(x)=\sqrt{3x}$

STRETCH by 3

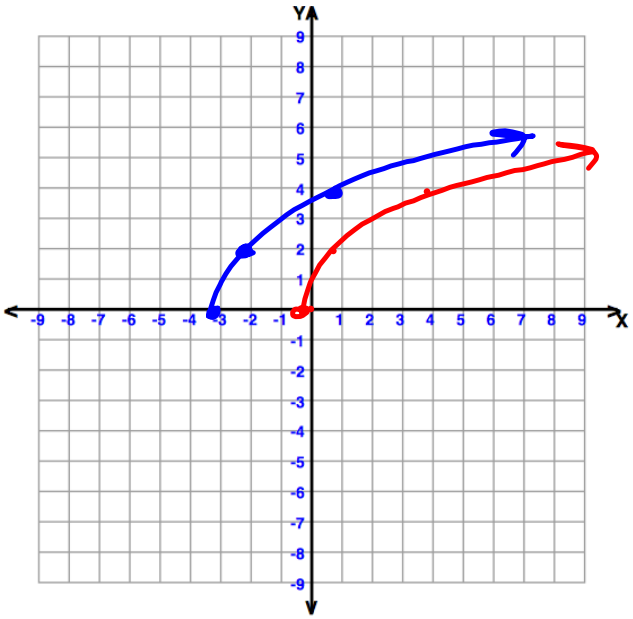
COMPRESS by 8

$f(x)=\sqrt{\frac{1}{8}x}$

State the parent function and identify the transformations and graph

$$y = 2\sqrt{x+3}$$

Parent: $y=\sqrt{x}$



- Left 3
- Stretch by 2

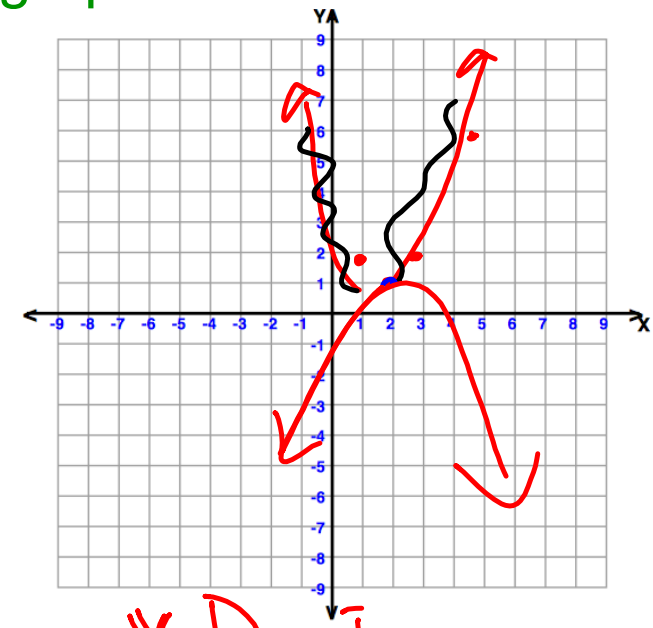
x	y
0	$\cancel{0 \cdot 2} = 0$
1	$\cancel{1 \cdot 2} = 2$
4	$\cancel{2 \cdot 2} = 4$

State the parent function and identify the transformations and graph

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

Parent: $y = x^2$

- Right 2
- Up 1
- Reflect over x



*Do Reflections First!

State the parent function and identify the transformations and graph

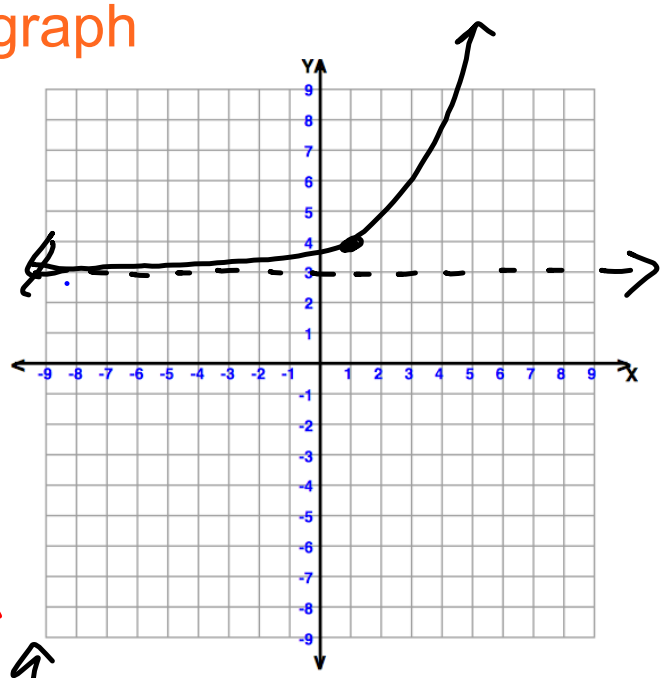
$$y = 2^{x-1} + 3$$

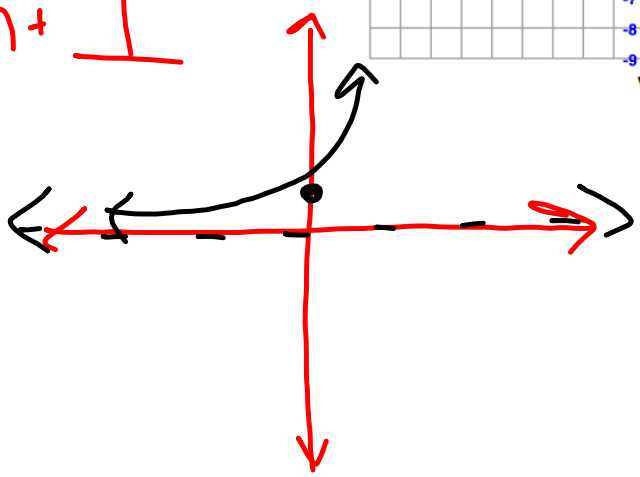
x

$y = 2^x$

- Up 3
- Right 1

$2^0 = 1$





State the parent function and identify the transformations and graph

$$y = 3|x| + 2$$

Parent: $y = |x|$

- up 2
- Stretch by 3