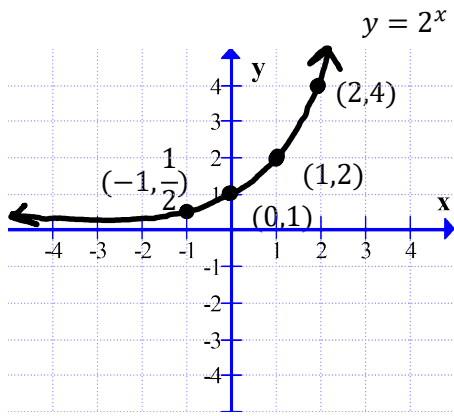


C12 - 7.4 - Exponent Reflections Graphs Notes



x	y
-1	$\frac{1}{2}$
0	1
1	2
2	4

$$2^{-1} = \frac{1}{2} \quad \left(-1, \frac{1}{2}\right)$$

$$2^0 = 1 \quad (0, 1)$$

$$2^1 = 2 \quad (1, 2)$$

$$2^2 = 4 \quad (2, 4)$$

End Behavior

$$x \rightarrow +\infty$$

$$y \rightarrow +\infty$$

$$x \rightarrow -\infty$$

$$y \rightarrow 0$$

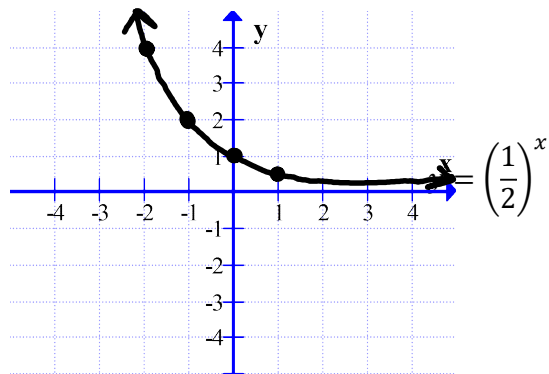
HA:

$$y = 0$$

Domain: $x \in \mathbb{R}$

Eg. Time* $t \geq 0$

$y = 2^{-x}$ Horizontal Reflection



$$\left(\frac{1}{2}\right)^x = (2^{-1})^x = 2^{-x}$$

$$x \rightarrow +\infty$$

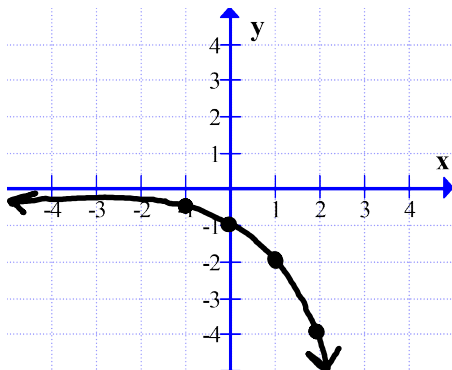
$$y \rightarrow 0$$

$$x \rightarrow -\infty$$

$$y \rightarrow +\infty$$

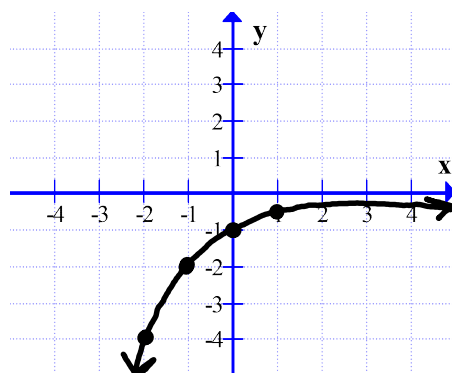
Remember: Positive Open up to the Right

Remember: Negative exponents and fractions with positive exponents Down to the Right



Vertical Reflection

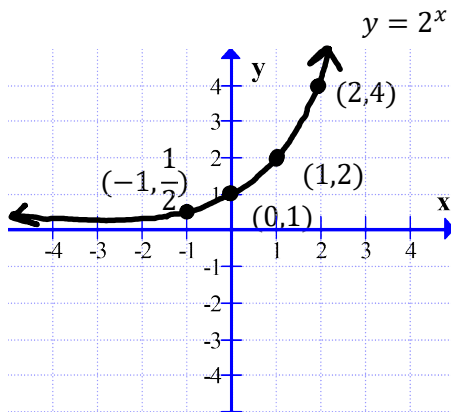
$$y = -2^x$$



Vertical Reflection and
Horizontal Reflection

$$y = -2^{-x}$$

C12 - 7.4 - Exponent Transformations Graphs Notes



x	y
-1	$\frac{1}{2}$
0	1
1	2
2	4

$$2^{-1} = \frac{1}{2}$$

$$\left(-1, \frac{1}{2}\right)$$

$$2^0 = 1$$

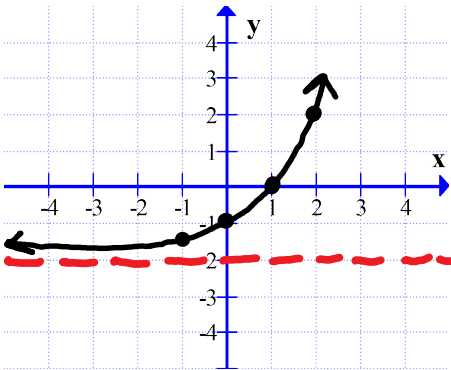
$$(0, 1)$$

$$2^1 = 2$$

$$(1, 2)$$

$$2^2 = 4$$

$$(2, 4)$$



$$y = 2^x - 2$$

Down 2

$$y - 2$$

$$y > -2$$

Range

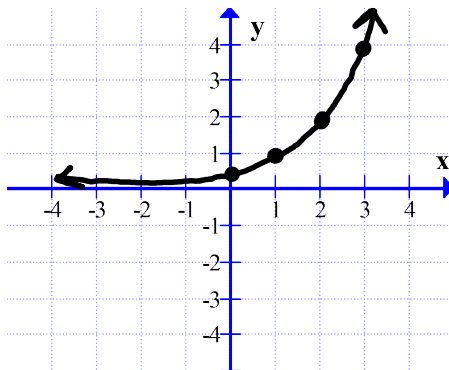
$$y = C^x \pm HA$$

HA:

$$y = -2$$

Domain
 $x \in \mathbb{R}$

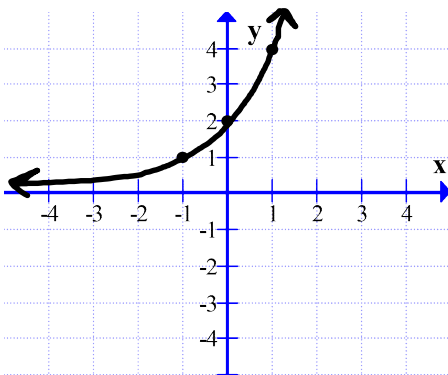
$$y = a(C)^{b(x-h)} + k$$



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

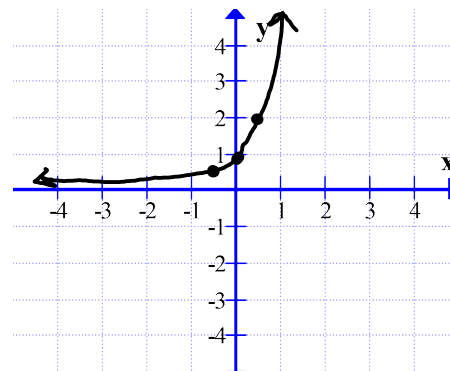
Right One

$$x + 1$$



Vertical Expansion = 2

$$y \times 2$$



Horizontal Compression = 1/2

$$x \div 2$$