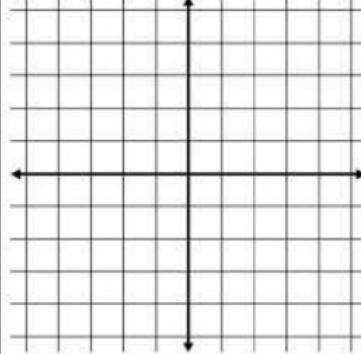


PRE-CALCULUS: by Finney, Demana, Waits and Kennedy
Chapter 1: Functions and Graphs *1.5: Library of
Functions and Inverses*

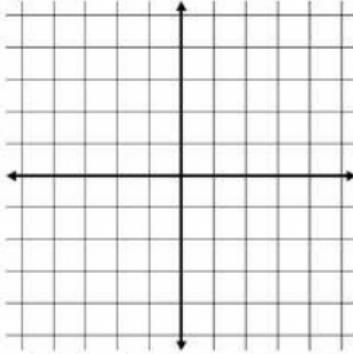
What you'll Learn About

Sketch a graph of the following functions and their inverses

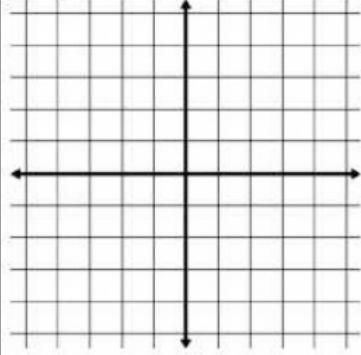
$$y = x$$



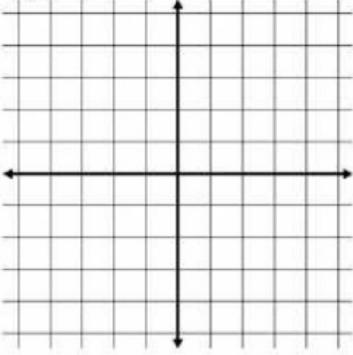
$$y = x^2 \text{ when } x \geq 0$$



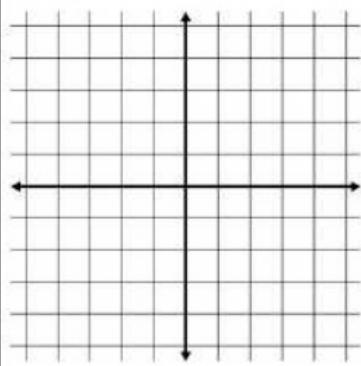
$$y = x^3$$



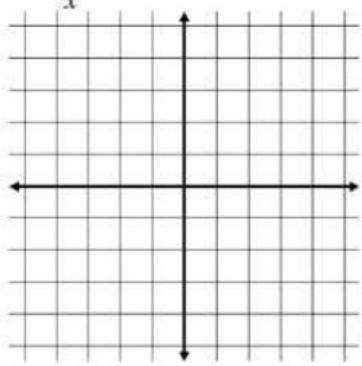
$$y = \sqrt{x}$$



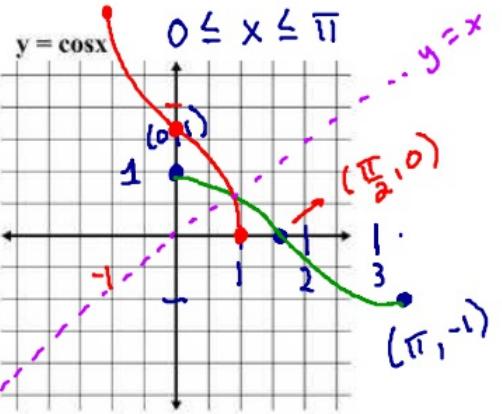
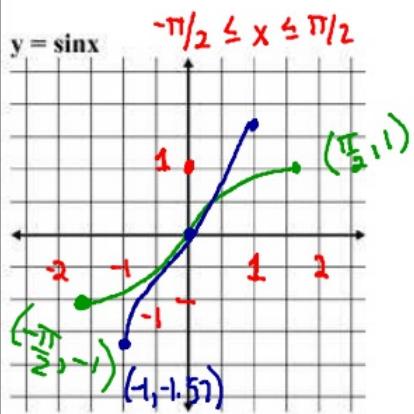
$$y = |x|$$



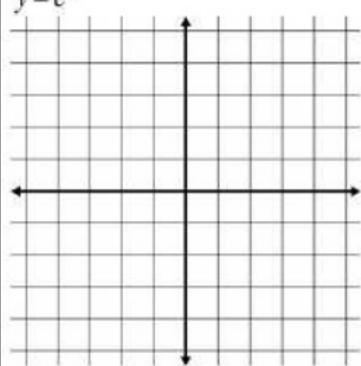
$$y = \frac{1}{x}$$



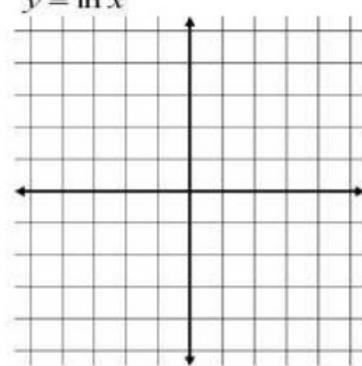
$$y = \sin x$$



$$y = e^x$$



$$y = \ln x$$



What you'll Learn About

Transformations

shift
up/down/left/right
reflections
compression/stretches

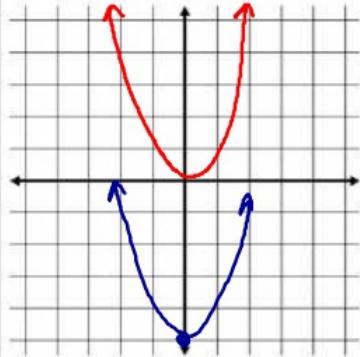
Inside do the
opposite operation

Outside do what
it says

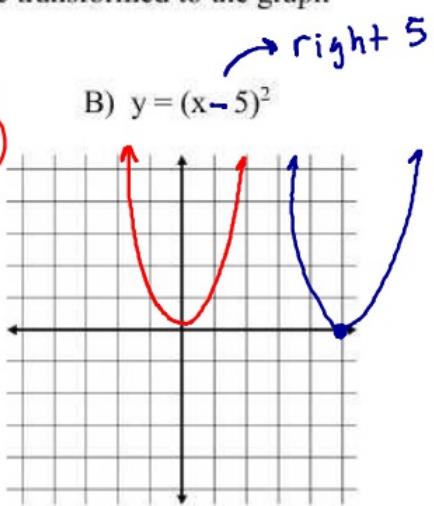
Down 5 ←

Describe how the graph of $y = x^2$ can be transformed to the graph of the given equation.

A) $y = x^2 - 5$

 $y = x^2$ (Parent Function)

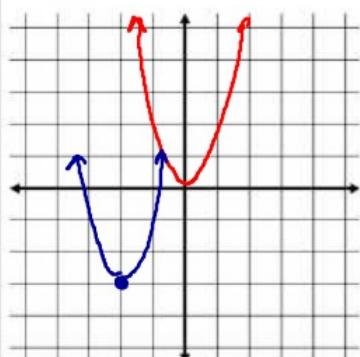
B) $y = (x - 5)^2$



C) $y = (x + 2)^2 - 3$

left + 2

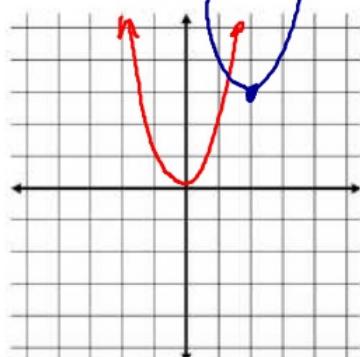
down 3



D) $y = (x - 2)^2 + 3$

right 2

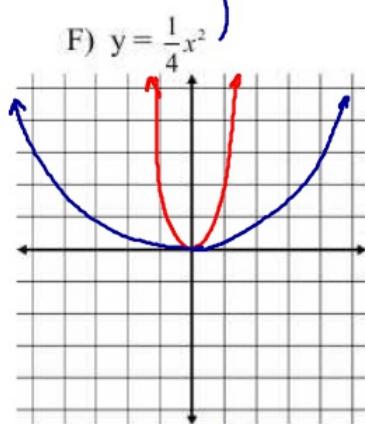
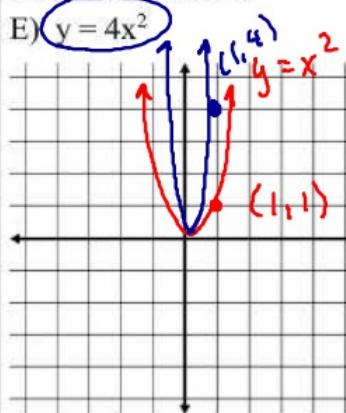
up 3



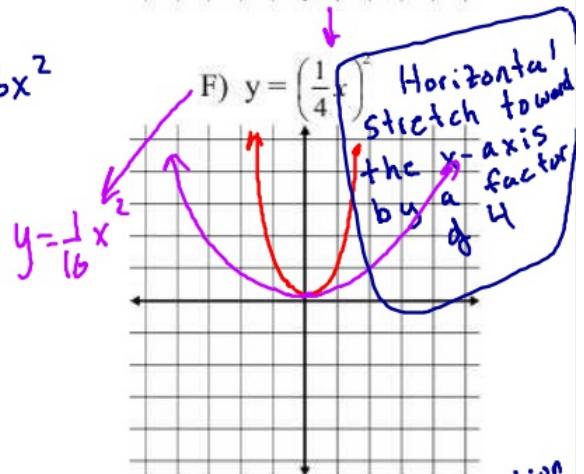
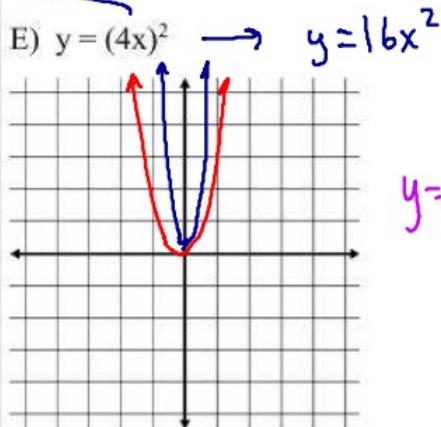
Vertical compression away from y-axis by a factor of $\frac{1}{4}$

Vertical stretch toward the y-axis by a factor of 4

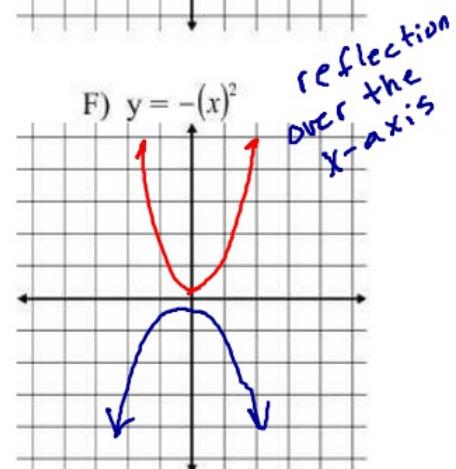
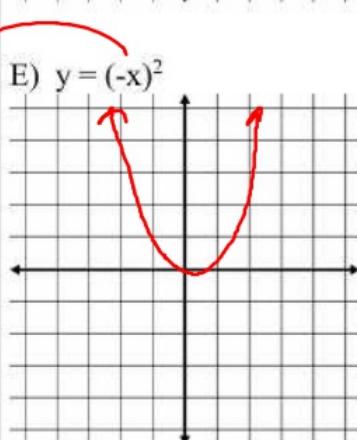
Describe how the graph of $y = x^2$ can be transformed to the graph of the given equation.



Horizontal compression away from the x-axis by a factor of $\frac{1}{4}$

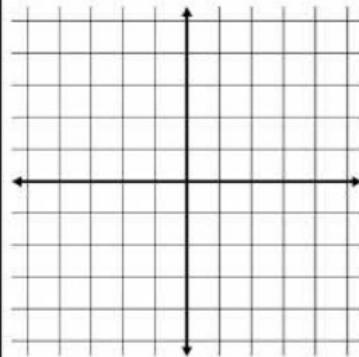


reflection over the y-axis

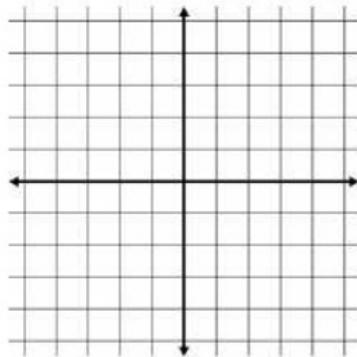


Describe how the graph of $y = x^3$ can be transformed to the graph of the given equation.

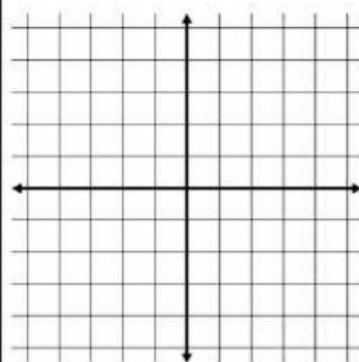
A) $y = x^3 + 1$



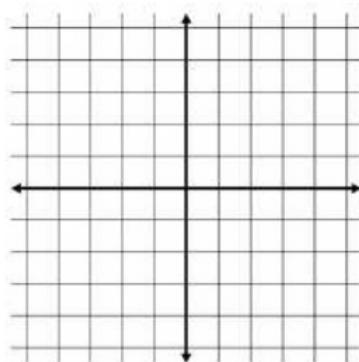
B) $y = (x - 2)^3$



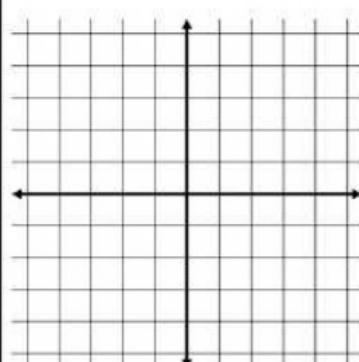
C) $y = (x + 2)^3 - 3$



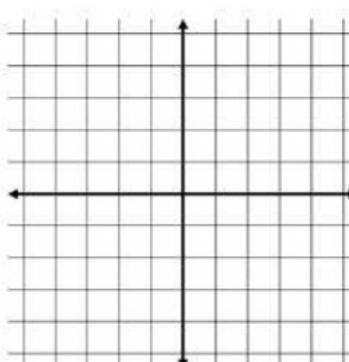
D) $y = (x - 2)^3 + 3$



E) $y = 4x^3$



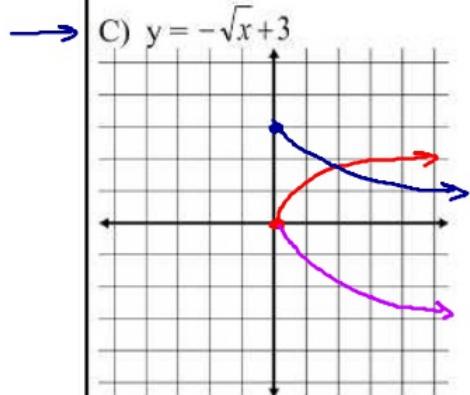
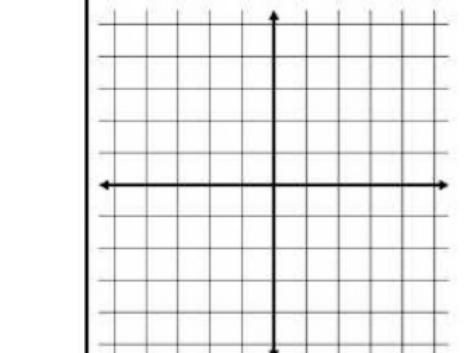
F) $y = \frac{1}{4}x^3$



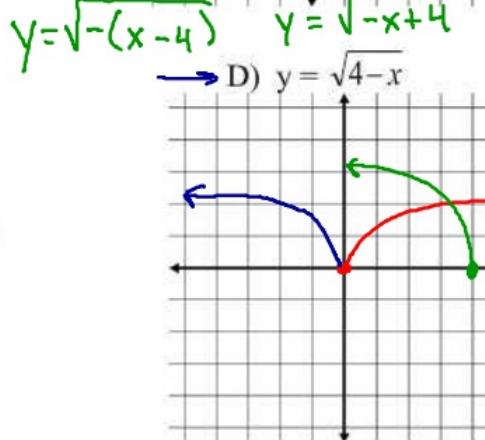
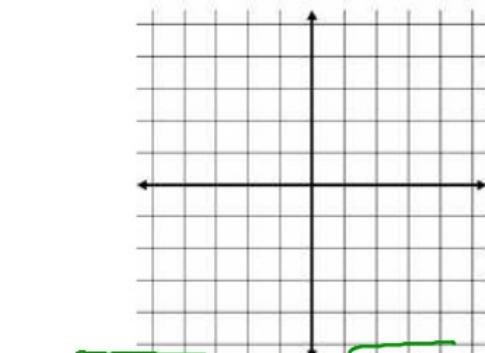
Describe how the graph of $y = \sqrt{x}$ can be transformed to the graph of the given equation.

A) $y = \sqrt{x} + 1$

B) $y = \sqrt{x-2} + 3$



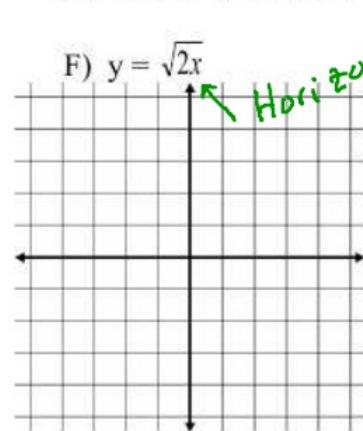
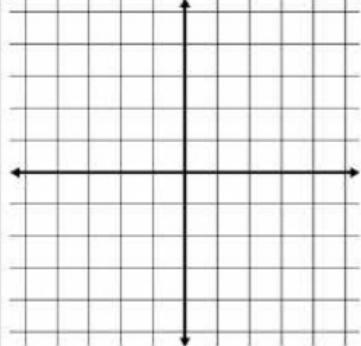
C) $y = -\sqrt{x} + 3$



$y = \sqrt{-(x-4)}$ $y = \sqrt{-x+4}$

D) $y = \sqrt{4-x}$

E) $y = 2\sqrt{x}$

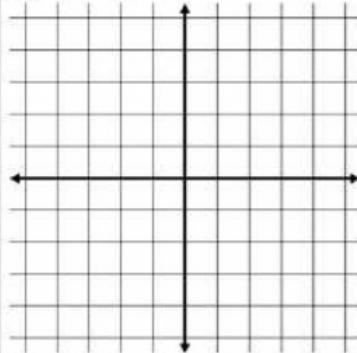


F) $y = \sqrt{2x}$

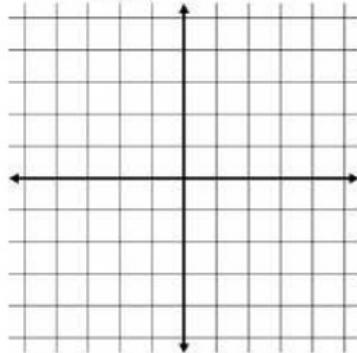
Vertical
Horizontal

Describe how the graph of $y = |x|$ can be transformed to the graph of the given equation.

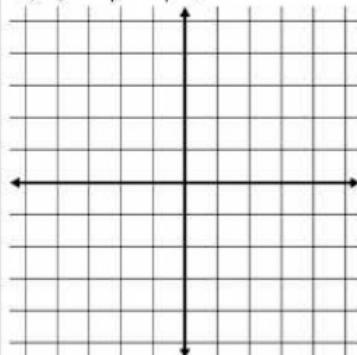
A) $y = |x| + 1$



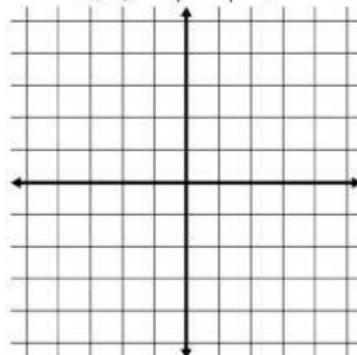
B) $y = |x - 2|$



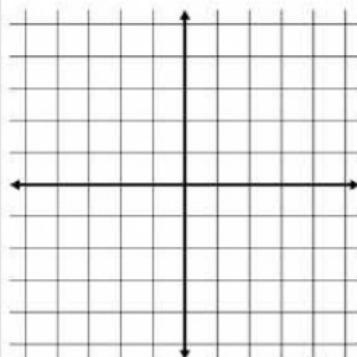
C) $y = |x + 2| - 3$



D) $y = |x - 2| + 3$



E) $y = \frac{1}{2}|x|$



F) $y = \left|\frac{1}{2}x\right|$

