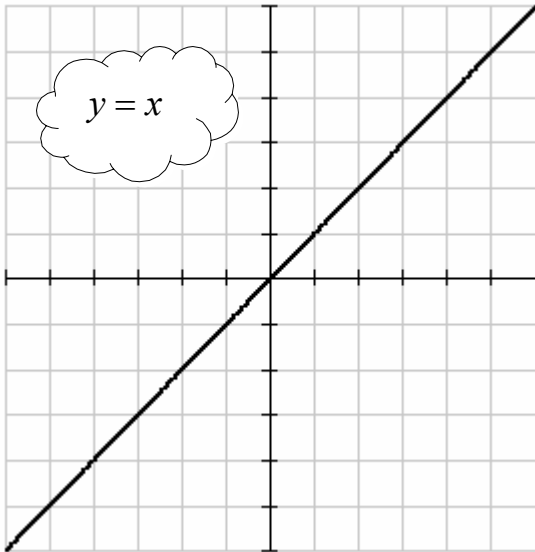


Families of Graphs: The Parent Functions and Transformations

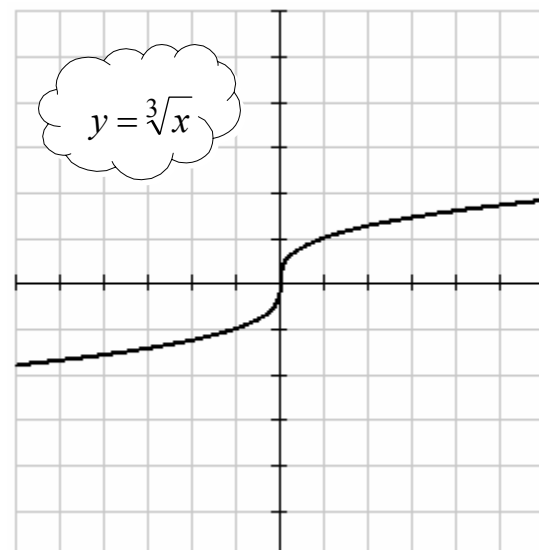
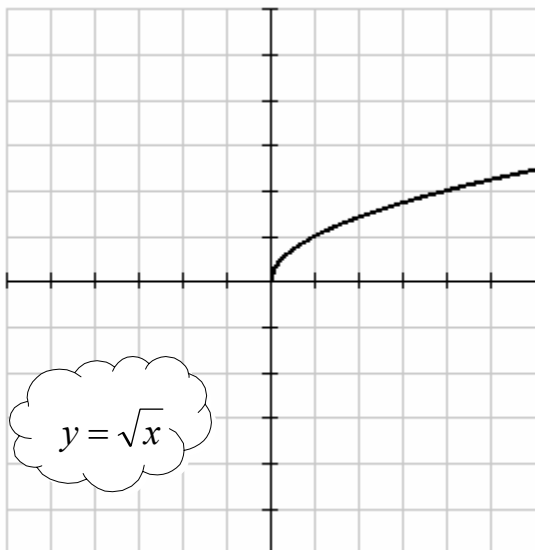
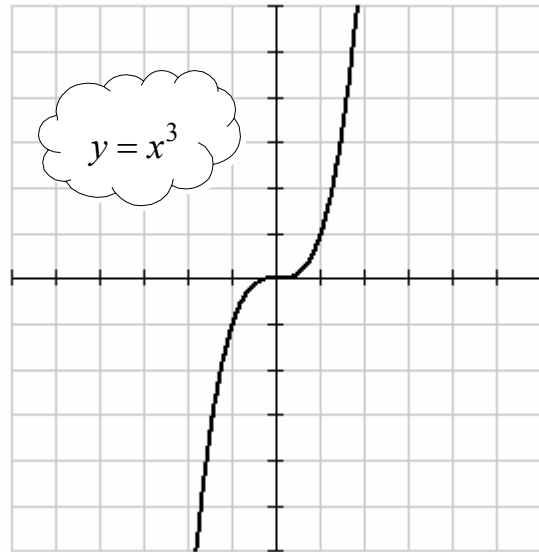
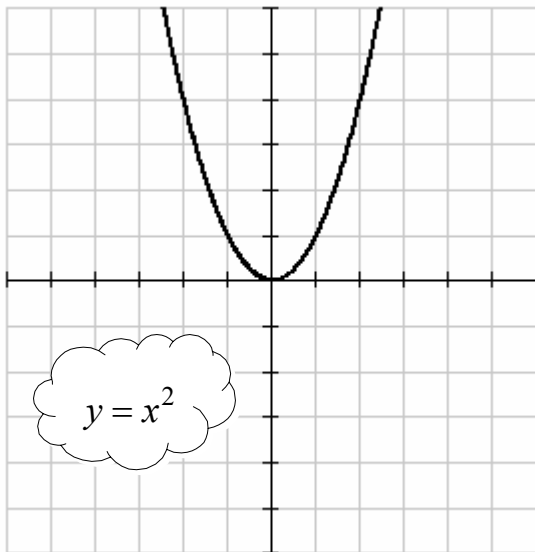


Absolute Values Applied to Functions

Given the original function to be $y = f(x)$:

$y = f(|x|)$ means the negative x 's will be a reflection of the positive x 's (y -axis symmetry).

$y = |f(x)|$ means that all the negative y -values will reflect upward to be positive y -values.



General Function Transformations

Given the original function to be $y = f(x)$:

$$y = Af(Bx - C) + D$$

Vertical
Stretch / Shrink
(normal effect)
- Reflection

Horizontal **
Stretch / Shrink
(inverse effect)
- Reflection

Horizontal **
Shift left or right
(opposite effect)

Vertical
Shift up or down
(normal effect)

** Note: If B and C occur together in the same problem, the rules change due to factoring.

