

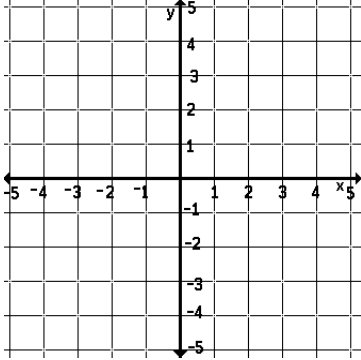
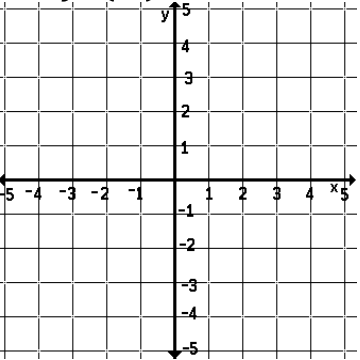
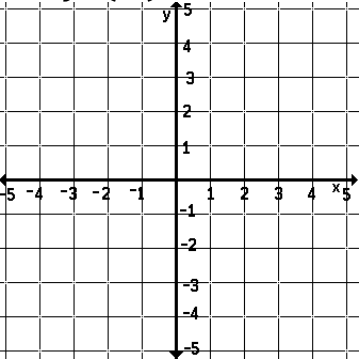
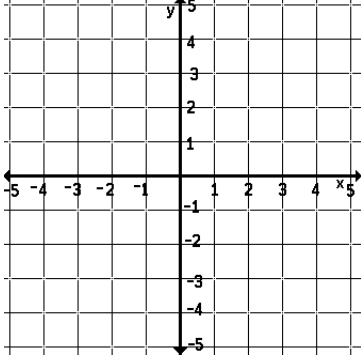
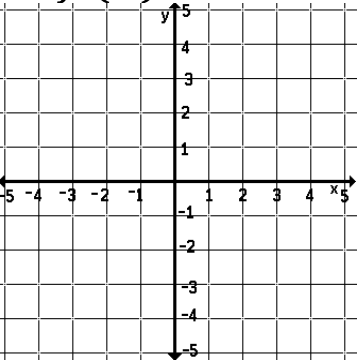
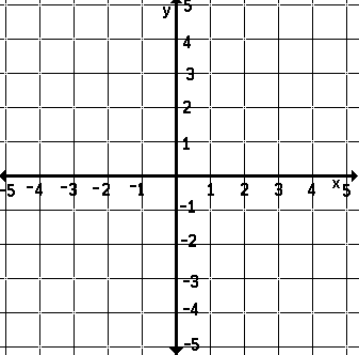
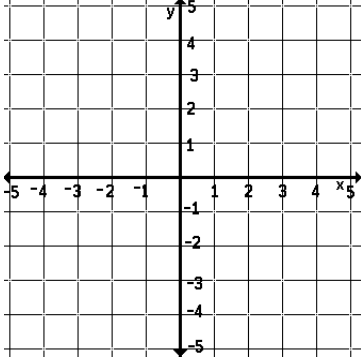
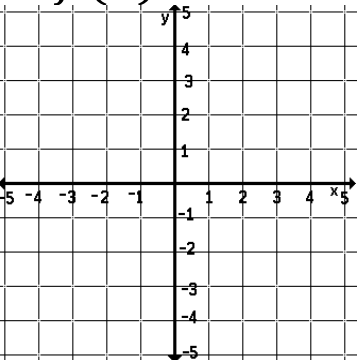
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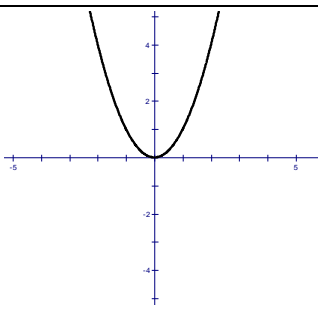
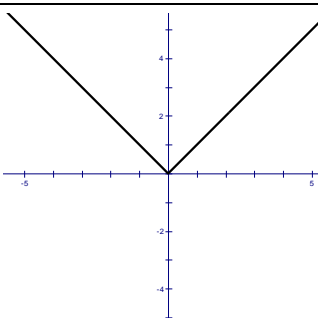
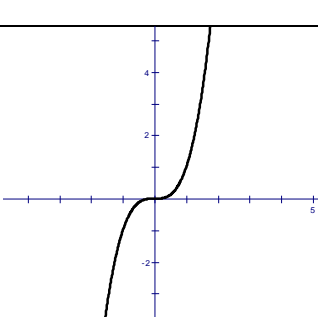
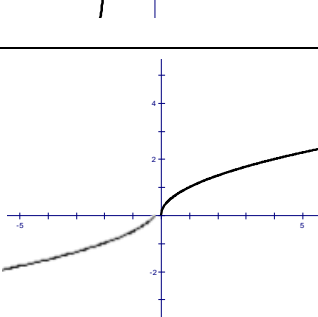
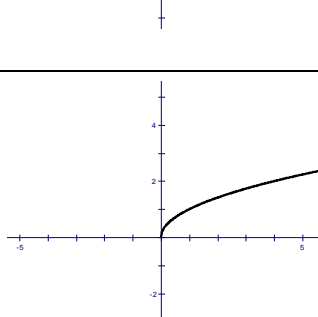
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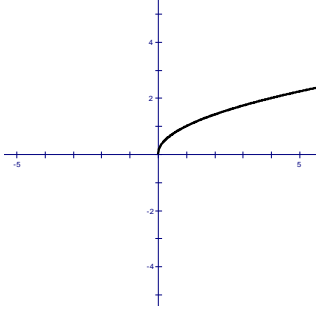
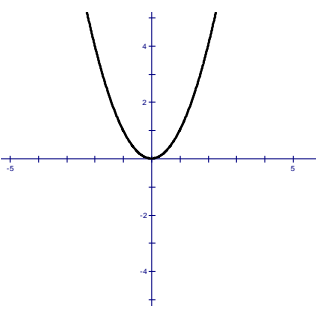
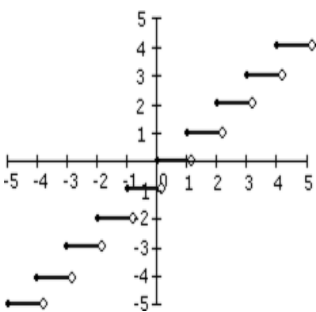
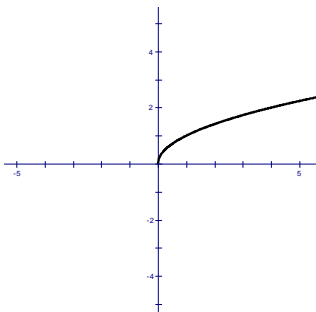
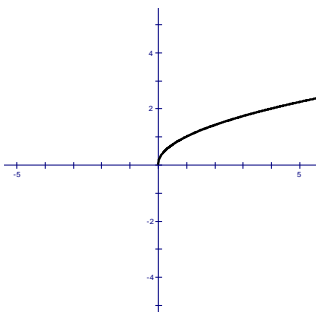
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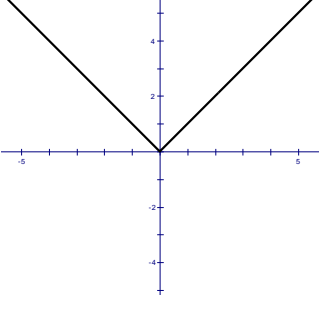
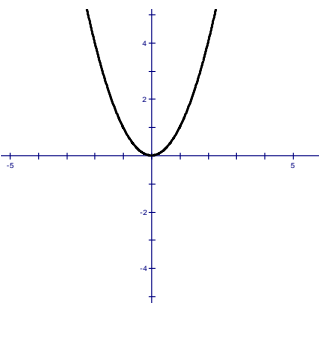
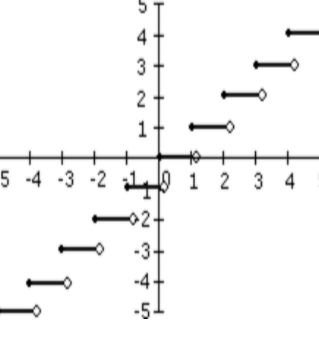
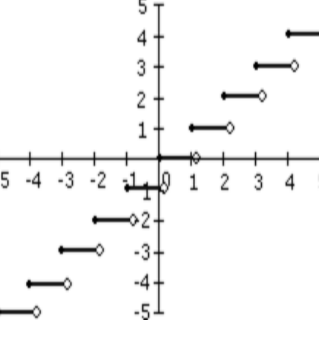
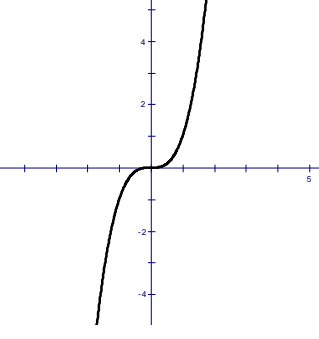
Math Lab: Transformations of Parent Graphs

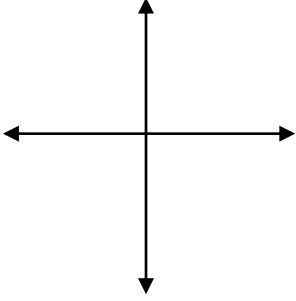
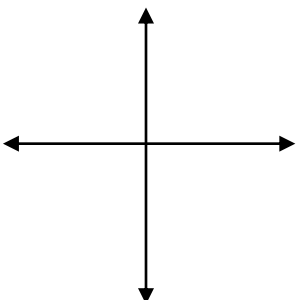
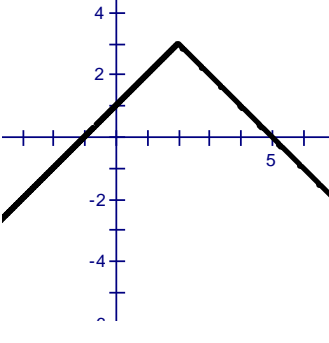
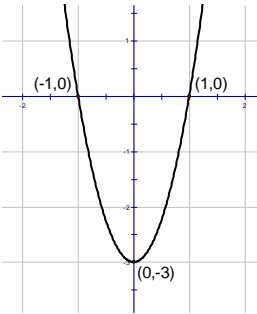
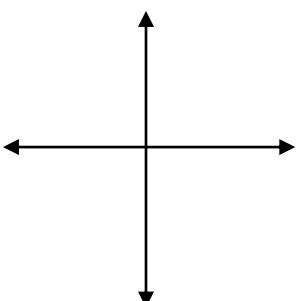
Use your graphing calculator and its table of values to sketch each graph as accurately as possible. Identify each type of function, and state its domain and range.

<p>$f(x) = x$</p>  <p>Type of Function: Domain: Range:</p>	<p>$f(x) = x^2$</p>  <p>Type of Function: Domain: Range:</p>	<p>$f(x) = x^3$</p>  <p>Type of Function: Domain: Range:</p>
<p>$f(x) = x$</p>  <p>Type of Function: Domain: Range:</p>	<p>$f(x) = \sqrt{x}$</p>  <p>Type of Function: Domain: Range:</p>	<p>$f(x) = 1/x$</p>  <p>Type of Function: Domain: Range:</p>
<p>$f(x) = \lfloor x \rfloor$</p>  <p>Type of Function: Domain: Range:</p>	<p>$f(x) = \sqrt[3]{x}$</p>  <p>Type of Function: Domain: Range:</p>	<p>What do all of these parent graphs have in common?</p>

Equation of Parent Function	Description of Transformation	Equation of Transformed Function	Graph of Transformed Function (in red)	Domain and Range of Transformed Function
$f(x) = x^2$		$f(x) + 3 =$		
$f(x) = x $		$f(x) - 5 =$		
$f(x) = x^3$		$f(x - 4) =$		
$f(x) = \sqrt[3]{x}$		$f(x + 2) =$		
$f(x) = \sqrt{x}$		$f(x + 3) - 4 =$		

Equation of Parent Function	Description of Transformation	Equation of Transformed Function	Graph of Transformed Function (in red)	Domain and Range of Transformed Function
$f(x) = \sqrt{x}$		$-f(x) =$		
$f(x) = x^2$		$-f(x) =$		
$f(x) = \llbracket x \rrbracket$		$-f(x) =$		
$f(x) = \sqrt{x}$		$f(-x) =$		
$f(x) = \sqrt{x}$		$-f(-x) =$		

Equation of Parent Function	Description of Transformation	Equation of Transformed Function	Graph of Transformed Function (in red)	Domain and Range of Transformed Function
$f(x) = x $		$3 \cdot f(x) =$		
$f(x) = x^2$		$\frac{1}{2} \cdot f(x) =$		
$f(x) = \llbracket x \rrbracket$		$f(2x) =$		
$f(x) = \llbracket x \rrbracket$		$f\left(\frac{1}{3}x\right) =$		
$f(x) = x^3$		$6 \cdot f(x) =$		

Equation of Parent Function	Description of Transformation	Equation of Transformed Function	Graph of Transformed Function (in red)	Domain and Range of Transformed Function
$f(x) = \sqrt{x}$				Domain $(-\infty, 3]$ Range $[2, \infty)$
		$f(x) = -(x - 2)^3 - 4$		
				
				
	A rational function has been translated up 4 units and 3 units to the right.			

Summarize

For each of the following, describe the transformation happening to the function.

Rigid Transformations	
Function Notation	Description of transformation
$f(x) = f(x) + c$	
$f(x) = f(x) - c$	
$f(x) = f(x + c)$	
$f(x) = f(x - c)$	
$f(x) = -f(x)$	
$f(x) = f(-x)$	

Non-rigid Transformations	
Function Notation	Description of transformation
$f(x) = c \cdot f(x)$	
$f(x) = \frac{1}{c} \cdot f(x)$	
$f(x) = f(cx)$	
$f(x) = f\left(\frac{1}{c}x\right)$	

Based on the tables, what is the difference between a rigid transformation and a non-rigid transformation?

Extend your thinking

Use the graph of f to sketch each new graph in a different color. Label each ordered pair.

(Hint: Think about how the transformation affects the x and y-coordinate of each anchor point on the graph.)

<p>1. $y = f(x) - 1$</p>	<p>2. $y = f(x - 1)$</p>	<p>3. $y = f(-x)$</p>
<p>4. $y = f(x + 1)$</p>	<p>5. $y = -f(x - 2)$</p>	<p>6. $y = \frac{1}{2}f(x)$</p>