

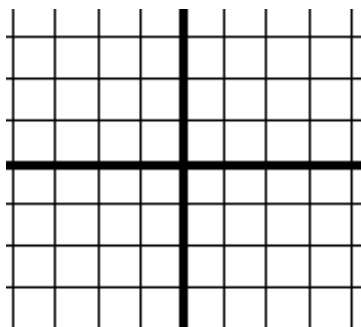
Algebra 1 Honors – Chapter 3.6  
 Graphing Transformations of Linear Functions

Name: \_\_\_\_\_

Per \_\_\_\_\_

“Parent Function”/basic function:

$f(x) = x$

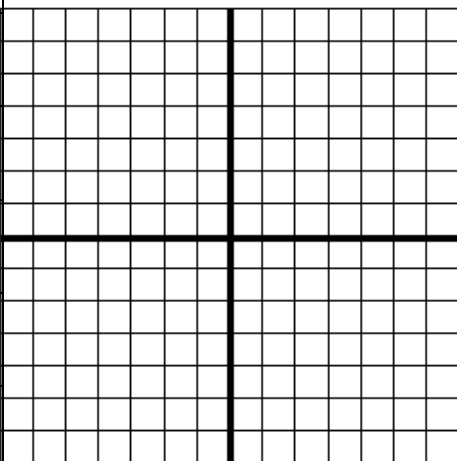


$x$	$f(x) = x$
-2	
-1	
0	
1	
2	

Important characteristics:

A. Let  $f(x) = 2x - 1$  Graph  $g(x) = f(x) + 3$

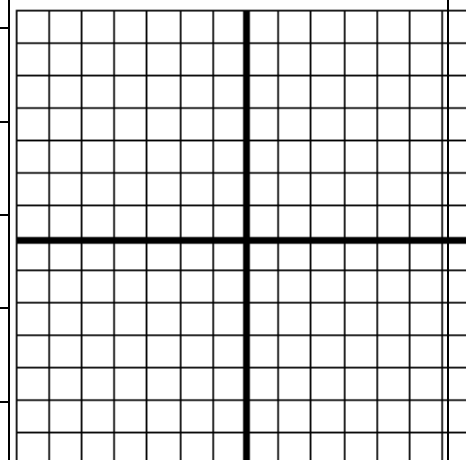
$x$	$g(x) = f(x) + 3$
-2	
-1	
0	
1	
2	



Contrast to  $f(x)$ :

B. Let  $f(x) = 2x - 1$  Graph  $h(x) = f(x) - 3$

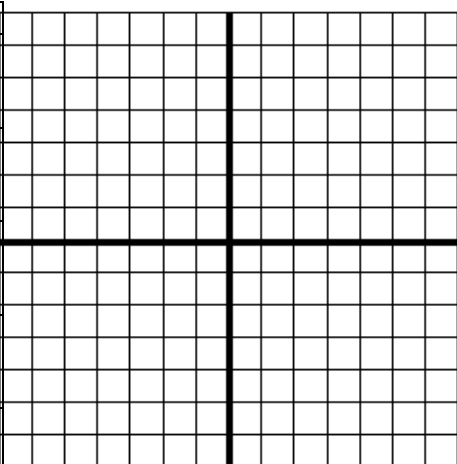
$x$	$h(x) = f(x) - 3$
-2	
-1	
0	
1	
2	



Contrast to  $f(x)$ :

C. Let  $f(x) = 2x - 1$  Graph  $s(x) = f(x + 3)$

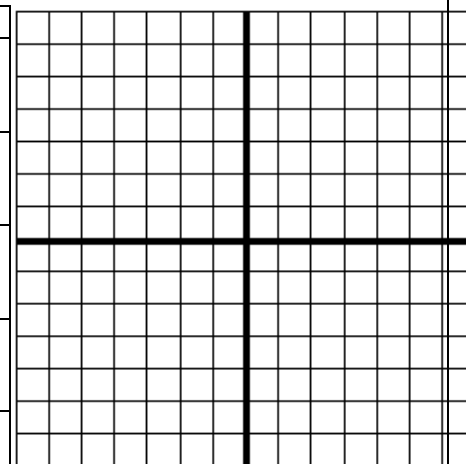
$x$	$s(x) = f(x + 3)$
-5	
-4	
-3	
-2	
-1	



Contrast to  $f(x)$ :

D. Let  $f(x) = 2x - 1$  Graph  $v(x) = f(x - 3)$

$x$	$v(x) = f(x - 3)$
1	
2	
3	
4	
5	



Contrast to  $f(x)$ :

E. Let  $f(x) = \frac{1}{2}x + 1$  Graph  $t(x) = -f(x)$

$x$	$f(x)$	$t(x) = -f(x)$

Contrast to  $f(x)$ :

F. Let  $f(x) = \frac{1}{2}x + 1$  Graph  $r(x) = f(-x)$

$x$	$-x$	$r(x) = f(-x)$

Contrast to  $f(x)$ :

G. Let  $f(x) = x - 1$  Graph  $j(x) = 3f(x)$

$x$	$f(x)$	$j(x) = 3f(x)$

Contrast to  $f(x)$ :

H. Let  $f(x) = x - 1$  Graph  $k(x) = \frac{1}{3}f(x)$

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

Contrast to  $f(x)$ :

### TRANSFORMING LINEAR FUNCTION

Type of Transformation	Example	General Condition Parent function: $f(x)$
<b>Vertical Translation</b> (up or down)		$f(x) + k$ $k > 0$ up $k < 0$ down
<b>Horizontal Translation</b> (to the left or right)		$f(x - h)$ $h > 0$ right $h < 0$ left
<b>Vertical Stretch or Compression</b> (Stretch or Shrink)		$a \cdot f(x)$ $a > 1$ stretch $0 < a < 1$ compression
<b>Horizontal Stretch or Compression</b> (Stretch or Shrink)		$f(ax)$ $a > 1$ compression $0 < a < 1$ stretch
<b>Reflection in the x-axis</b>		$-f(x)$ over x-axis
<b>Reflection in the y-axis</b>		$f(-x)$ over y-axis