

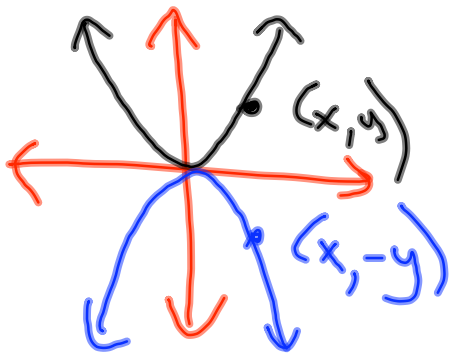
Transformations

$y = f(x+h)$ ↑ replace x with $x+h$ slides or translations
 if $h > 0$ slides left $|h|$ units. $(4, 2) \rightarrow (4 - |h|, 2)$
 if $h < 0$ slides right h units. $(4, 2) \rightarrow (4 + |h|, 2)$

$y+k=f(x)$
 if $k < 0$ the graph slides up $|k|$ units $(4, 2) \rightarrow (4, 2 + |k|)$
 if $k > 0$ the graph slides down k units $(4, 2) \rightarrow (4, 2 - k)$

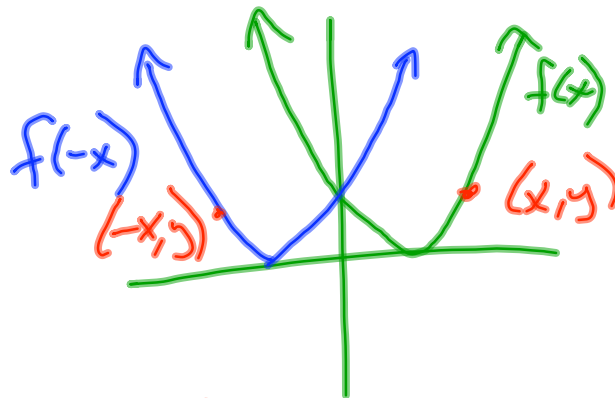
Reflections

$y = -f(x)$
 reflection across
 x axis

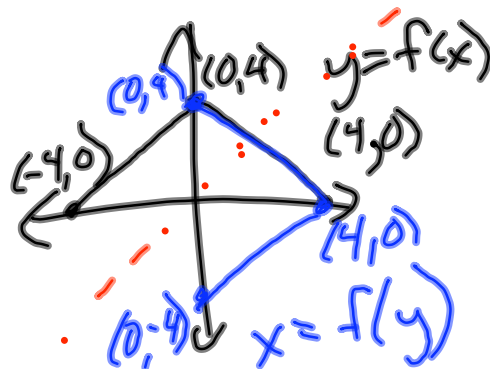


$y = f(x) \iff x = f(y)$
 reflection across
 the $y = x$ line

$y = f(-x)$
 reflection
 across y axis



called the
inverse

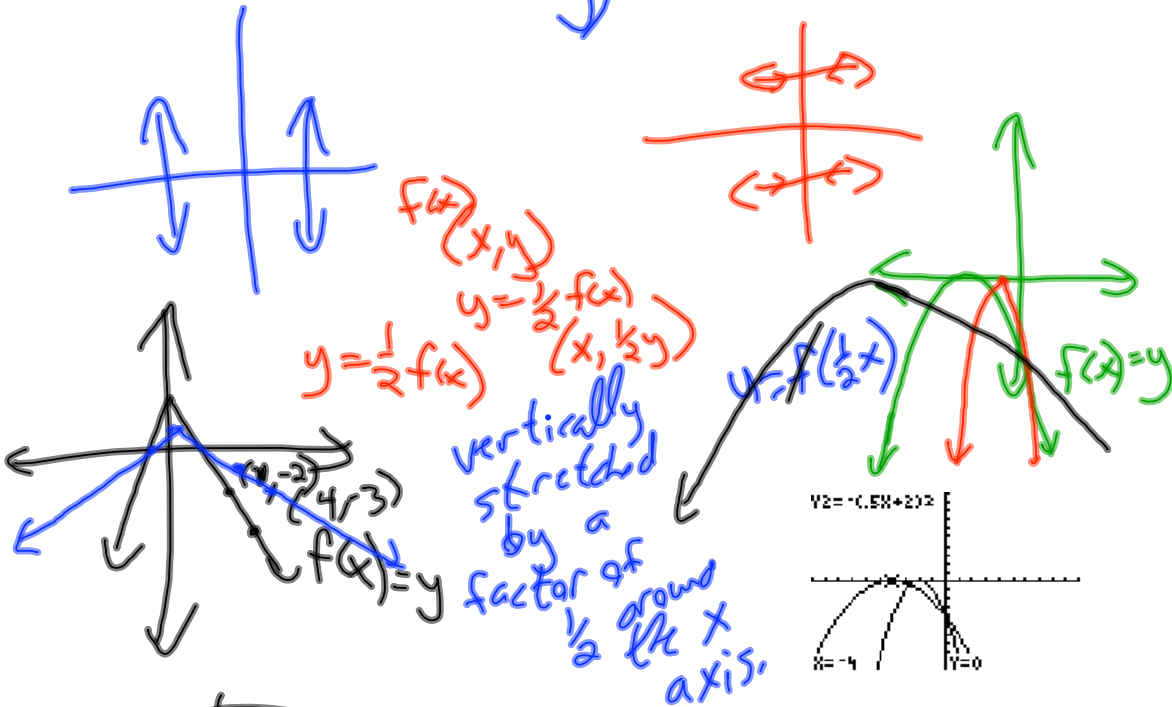


Handwritten signature

Stretches

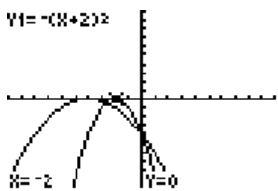
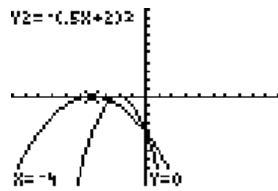
$y = af(x)$
 reflections
 across the
 x axis
 (vertical stretching)

$y = f(bx)$
 reflections across
 the y axis
 (horizontal stretching)



$f(x)$ (x, y)
 $y = \frac{1}{2}f(x)$ $(x, \frac{1}{2}y)$

vertically stretched by a factor of $\frac{1}{2}$ around the x axis.



$y = f(x)$
 (x, y)

$y = f(\frac{1}{2}x)$
 $(2x, y)$

Horizontal stretch by a factor of 2 around the y axis

~~$y = f(x)$~~