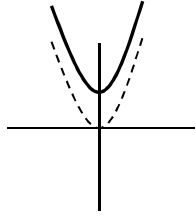


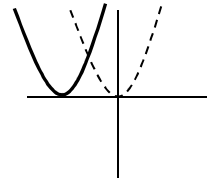
Transformations

Original graph: $y = f(x)$

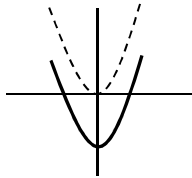
Vertical shift c units **up**: $y = f(x) + c$



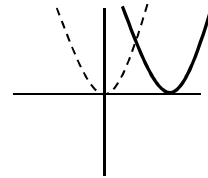
Horizontal shift c units to the **left**: $y = f(x+c)$



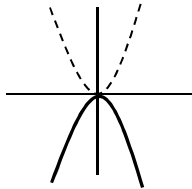
Vertical shift c units **down**: $y = f(x) - c$



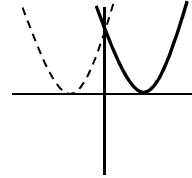
Horizontal shift c units to the **right**: $y = f(x-c)$



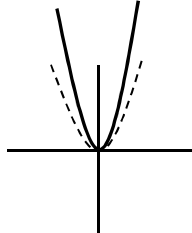
Reflection about the **x-axis**: $y = -f(x)$



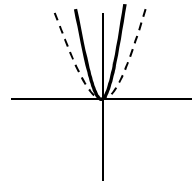
Reflection about the **y-axis**: $y = f(-x)$



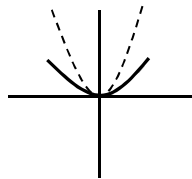
Vertical stretch: $y = c f(x)$



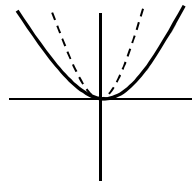
Horizontal compression: $y = f(c x)$



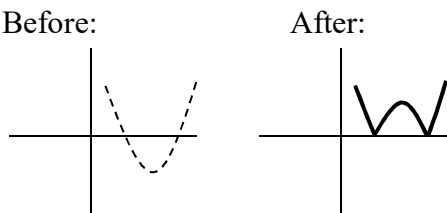
Vertical compression: $y = \frac{1}{c} f(x)$



Horizontal stretch: $y = f(\frac{1}{c} x)$



Absolute value: $y = |f(x)|$



Absolute value: $y = f(|x|)$

