

TRANSFORMATION RULES

Square Root

Rigid Transformations: The resulting graph has the same size and shape of the parent graph.		
Function Notation	Transformation	Impact on points
$f(x) + k$	Vertical translation up	Add k to the y-coordinate
$f(x) - k$	Vertical translation down	Subtract k from the y-coordinate
$f(x + h)$	Horizontal translation left	Subtract h from the x-coordinate
$f(x - h)$	Horizontal translation right	Add h to the x-coordinate
$-f(x)$	Reflection in the x-axis	Multiply the y-coordinate by -1
$f(-x)$	Reflection in the y-axis	Multiply the x-coordinate by -1

Non-rigid Transformations: The resulting graph has the same shape of the parent graph but different size.		
Function Notation	Transformation	Impact on points
$a \cdot f(x)$ when $ a > 1$	Dilation causing a vertical stretch away from the x-axis	Multiply the y-coordinate by a
$a \cdot f(x)$ when $ a < 1$	Dilation causing a vertical shrink toward the x-axis	Multiply the y-coordinate by a
$f(bx)$ when $ b > 1$	Dilation causing a horizontal shrink toward the y-axis	Divide the x-coordinate by b
$f(bx)$ when $ b < 1$	Dilation causing a horizontal stretch away from the y-axis	Divide the x-coordinate by b

Translate means to move or shift.
Reflect means to flip over.
Dilate means to stretch or shrink (compress).

Constant

Linear

Quadratic

Cubic

Absolute Value

Cube Root

Rational

Ceiling

Floor

Use the order in the table below when applying transformations to a parent graph

$$a \cdot f(b(x - h)) + k$$

Three anchor points	Multiply y-value by $a = \underline{\quad}$	Divide x-value by $b = \underline{\quad}$	Add $h = \underline{\quad}$ to the x-value	Add $k = \underline{\quad}$ to the y-value

Parent Graphs of Functions

