

Domain and Range

Function Type	Graph	Domain	Range	Notes
Linear $f(x)=mx+b$		$(-\infty, \infty)$	$(-\infty, \infty)$	No restrictions Not ever!
Quadratic $f(x)=ax^2+bx+c$		$(-\infty, \infty)$	If $a < 0$ then $(-\infty, f(\frac{-b}{2a}))$  If $a > 0$ then $(f(\frac{-b}{2a}), \infty)$	Quadratic functions have a max if $a < 0$ .  Quadratic functions have a min if $a > 0$ .  This restricts the range.
Radical (even indices) $f(x) = \sqrt{x}$		$[0, \infty)$ For even indices	$[0, \infty)$ for even indices	The expression under the radical must always be positive or zero for even indices.
Radical (odd indices) $f(x) = \sqrt[3]{x}$		$(-\infty, \infty)$	$(-\infty, \infty)$	The expression under the radical does not need to be positive. An odd number of negative values multiplied together is negative.