

() → not included
 [] → included

Generic
 Transformation

Parent Functions Chart

Function	End Behavior	Domain/Range	Transformation	Graph	Increasing/Decreasing
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$y = x - 5$ Linear	As $x \rightarrow \infty$, $y \rightarrow \infty$ As $x \rightarrow -\infty$, $y \rightarrow -\infty$ (odd)	Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$	Down 5		Increasing: $(-\infty, \infty)$ Decreasing: —
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$y = (x - 4)^2$ Quadratic	$\lim_{x \rightarrow -\infty} f(x) = \infty$ $\lim_{x \rightarrow \infty} f(x) = \infty$ (even)	Domain: $(-\infty, \infty)$ All real #s Range: $[0, \infty)$	Right 4		Increasing: $(4, \infty)$ Decreasing: $(-\infty, 4)$
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$y = x + 3 - 2$ Absolute Value	As $x \rightarrow \infty$, $y \rightarrow \infty$ As $x \rightarrow -\infty$, $y \rightarrow \infty$ (even)	Domain: $(-\infty, \infty)$ Range: $[-2, \infty)$	Left 3, Down 2		Increasing: $(-3, \infty)$ Decreasing: $(-\infty, -3)$
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$y = -\sqrt{x + 1}$ Square Root	As $x \rightarrow \infty$, $y \rightarrow -\infty$ As $x \rightarrow -1$, $y \rightarrow 0$ (neither)	Domain: $[-1, \infty)$ Range: $(-\infty, 0)$	Flipped across x, Left 1		Increasing: — Decreasing: $(-1, \infty)$
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If degree is even: both up or down
 odd: one up, one down
 If leading coefficient is positive: Right arm ↑
 Negative: Right arm ↓

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$y = (x-5)^3 - 4$ ④ Cubic	$\lim_{x \rightarrow -\infty} f(x) = -\infty$ $\lim_{x \rightarrow +\infty} f(x) = +\infty$ (odd)	Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$	Right 5, Down 4		Increasing: $(-\infty, \infty)$ Decreasing: None
$y = \sqrt[3]{x-2} + 5$ ⑤ Cubic Root	As $x \rightarrow \infty$ $y \rightarrow \infty$ As $x \rightarrow -\infty$ $y \rightarrow -\infty$ (odd)	Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$	Up 5, Right 2		Increasing: $(-\infty, \infty)$ Decreasing: —

