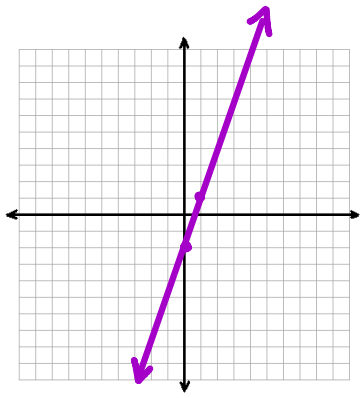
Your integrity is NOT worth your Algebra 2 grade. DO YOUR OWN WORK!

Name Solutions

Function Review: Domain, Range & Graphing

Directions: Use a calculator to sketch each of the following functions and identify the characteristics listed (not all of these functions have a vertex). Express the domain and range of each function in both interval and set-builder notation.

1. $f(x) = 3x - 2$



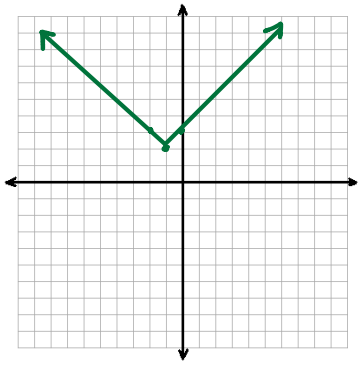
Name linear function **Vertex** N/A

Domain: Interval $(-\infty, +\infty)$ Set-Builder $\{x \mid x = \mathbb{R}\}$

Range: Interval $(-\infty, +\infty)$ Set-Builder $\{y \mid y = \mathbb{R}\}$

Transformations: vertical stretch 3, translated down 3 units

2. $f(x) = |x + 1| + 2$ (← 1, ↑ 2)



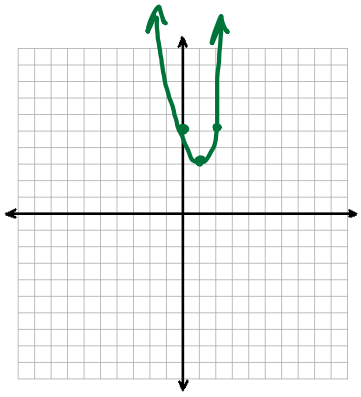
Name absolute value **Vertex** $(-1, 2)$

Domain: Interval $(-\infty, +\infty)$ Set-Builder $\{x \mid x = \mathbb{R}\}$

Range: Interval $[2, +\infty)$ Set-Builder $\{y \mid y \geq 2\}$

Transformations: translated 1 left & 2 up

3. $f(x) = 2(x - 1)^2 + 3$



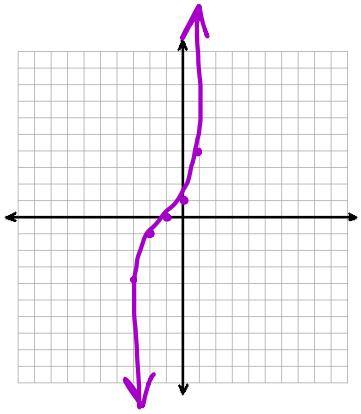
Name quadratic **Vertex** $(1, 3)$ 1, 2)

Domain: Interval $(-\infty, +\infty)$ Set-Builder $\{x \mid x = \mathbb{R}\}$

Range: Interval $[3, +\infty)$ Set-Builder $\{y \mid y \geq 3\}$

Transformations: vertical stretch of 3 translated 1 right, up 3

4. $f(x) = (x + 1)^3$



Name cubic **Vertex** $(-1, 0)$

Domain: Interval $(-\infty, +\infty)$ Set-Builder $\{x \mid x = \mathbb{R}\}$

Range: Interval $(-\infty, +\infty)$ Set-Builder $\{y \mid y = \mathbb{R}\}$

Transformations: translated left 1

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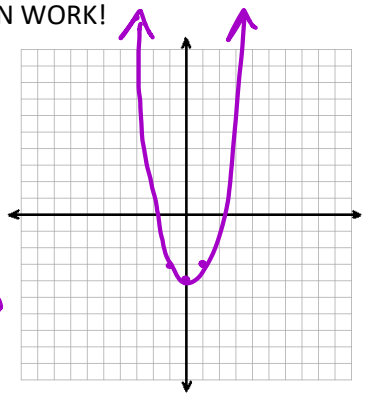
5. $f(x) = x^4 - 3$



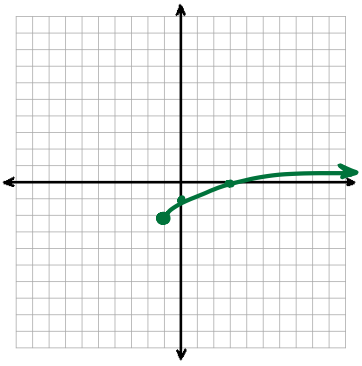
Name quartic **Vertex** $(0,-3)$

Domain: Interval $(-\infty,+\infty)$ Set-Builder $\{x \mid x=\mathbb{R}\}$

Range: Interval $[-3,+\infty)$ Set-Builder $\{y \mid y \geq -3\}$

Transformations: translated 3 units down

6. $f(x) = \sqrt{x+1} - 2$



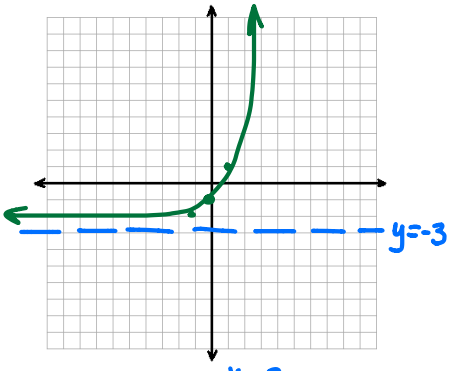
Name radical (square root) **Vertex** $(-1,-2)$

Domain: Interval $[-1,+\infty)$ Set-Builder $\{x \mid x \geq -1\}$

Range: Interval $[-2,+\infty)$ Set-Builder $\{y \mid y \geq -2\}$

Transformations: translated 1 left, down 2

7. $f(x) = 2^{x+1} - 3$



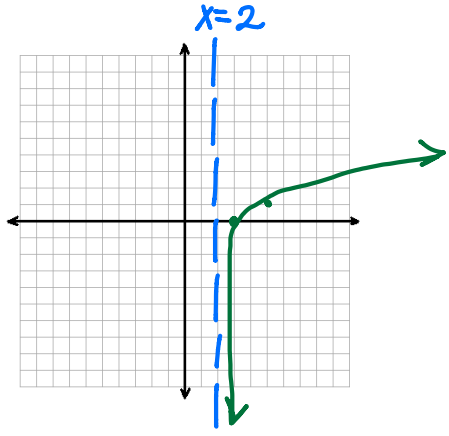
Name exponential **Vertex** N/A

Domain: Interval $(-\infty,+\infty)$ Set-Builder $\{x \mid x=\mathbb{R}\}$

Range: Interval $(-3,+\infty)$ Set-Builder $\{y \mid y > -3\}$

Transformations: translated 1 left 3 down

8. $f(x) = \log_3(x-2)$



Name logarithm **Vertex** N/A

Domain: Interval $(2,+\infty)$ Set-Builder $\{x \mid x > 2\}$

Range: Interval $(-\infty,+\infty)$ Set-Builder $\{y \mid y=\mathbb{R}\}$

Transformations: translated 2 units right