

Explain: Parent Functions
Pre-AP Algebra 2

Name Ms. Pelgado
Date _____ Per _____

Parent functions are the most basic in the family of functions. They are centered at or near the origin. Every function we will use this year is based on one of the following functions.

Linear function:

Equation: $f(x) = x$

Calculator Notation: $y = x$

Domain: \mathbb{R}

Range: \mathbb{R}

x – intercept: $(0, 0)$

y – intercept: $(0, 0)$

Symmetry: **ODD**

Max: \emptyset

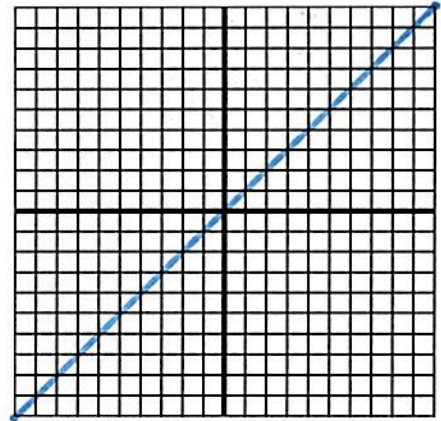
Min: \emptyset

Increasing: $(-\infty, \infty)$

Decreasing: \emptyset

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: \emptyset



Absolute Value function:

Equation: $f(x) = |x|$

Calculator Notation: $y = x$

Domain: \mathbb{R}

Range: $[0, \infty)$

x – intercept: $(0, 0)$

y – intercept: $(0, 0)$

Symmetry: **even**

Max: \emptyset

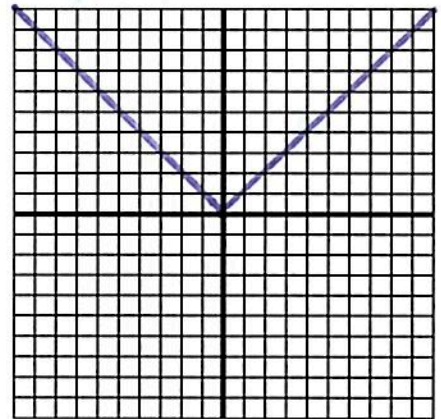
Min: $(0, 0)$

Increasing: $(0, \infty)$

Decreasing: $(-\infty, 0)$

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: \emptyset



Quadratic function:

Equation: $f(x) = x^2$

Calculator Notation: $y = x$

Domain: \mathbb{R}

Range: $[0, \infty)$

x – intercept: $(0, 0)$

y – intercept: $(0, 0)$

Symmetry: **even**

Max: \emptyset

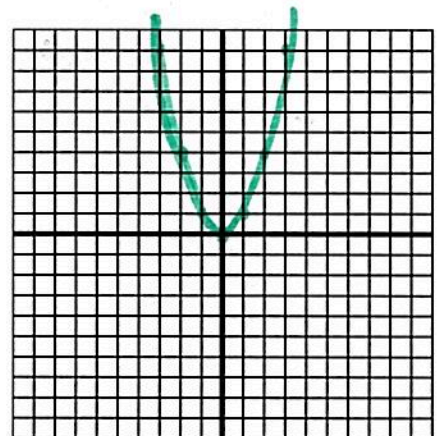
Min: $(0, 0)$

Increasing: $(0, \infty)$

Decreasing: $(-\infty, 0)$

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: \emptyset



Square Root function:

Equation: $f(x) = \sqrt{x}$

Calculator Notation: $y = \sqrt{x}$

Domain: $[0, \infty)$

Range: $[0, \infty)$

x - intercept: $(0, 0)$

y - intercept: $(0, 0)$

Symmetry: NONE

Max: \emptyset

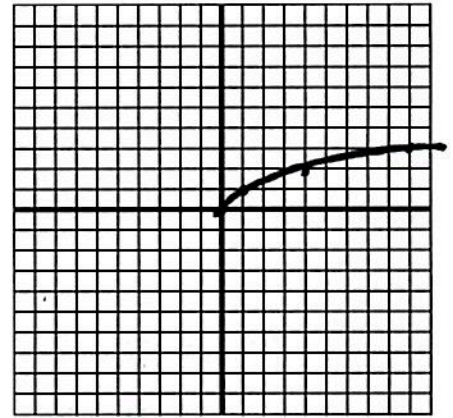
Min: $(0, 0)$

Increasing: $(0, \infty)$

Decreasing: \emptyset

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: \emptyset



Cubic function:

Equation: $f(x) = x^3$

Calculator Notation: $y = x^3$

Domain: \mathbb{R}

Range: \mathbb{R}

x - intercept: $(0, 0)$

y - intercept: $(0, 0)$

Symmetry: ODD

Max: \emptyset

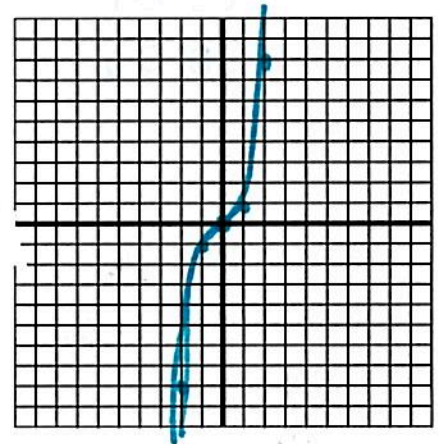
Min: \emptyset

Increasing: $(-\infty, \infty)$

Decreasing: \emptyset

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: \emptyset



Cube Root function:

Equation: $f(x) = \sqrt[3]{x}$

Calculator Notation: $y = \sqrt[3]{x}$

Domain: \mathbb{R}

Range: \mathbb{R}

x - intercept: $(0, 0)$

y - intercept: $(0, 0)$

Symmetry: ODD

Max: \emptyset

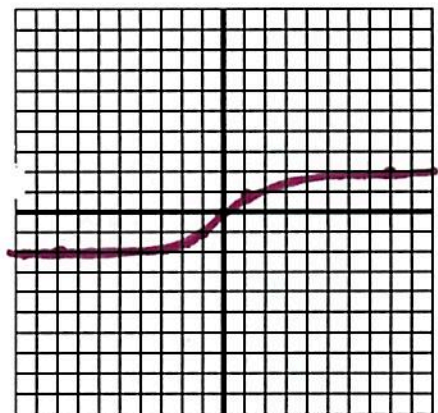
Min: \emptyset

Increasing: $(-\infty, \infty)$

Decreasing: \emptyset

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: \emptyset



Exponential (Growth) function:

Equation: $f(x) = 2^x$

Calculator Notation: $y = 2^x$

Domain: \mathbb{R}

Range: $(0, \infty)$

x - intercept: \emptyset

y - intercept: $(0, 1)$

Symmetry: \emptyset

Max: \emptyset

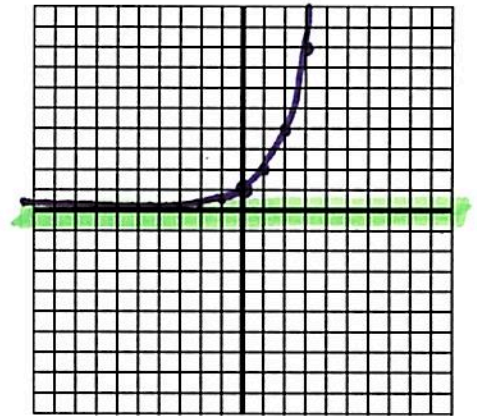
Min: \emptyset

Increasing: $(-\infty, \infty)$

Decreasing: \emptyset

Vertical Asymptotes: \emptyset

Horizontal Asymptotes: $y = 0$



Logarithmic function:

Equation: $f(x) = \log_{10}(x)$

Calculator Notation: $y = \log(x)$

Domain: $(0, \infty)$

Range: \mathbb{R}

x - intercept: $(1, 0)$

y - intercept: \emptyset

Symmetry: \emptyset

Max: \emptyset

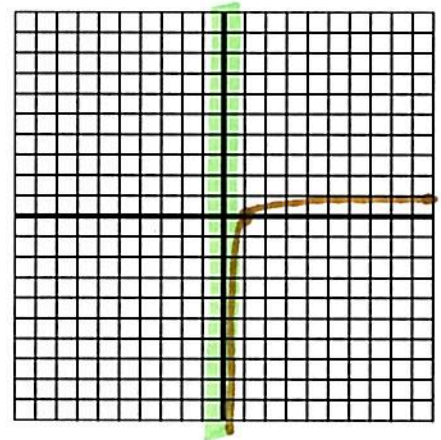
Min: \emptyset

Increasing: $(0, \infty)$

Decreasing: \emptyset

Vertical Asymptotes: $x = 0$

Horizontal Asymptotes: \emptyset



Rational function:

Equation: $f(x) = \frac{1}{x}$

Calculator Notation: $y = \frac{1}{x}$

Domain: $(-\infty, 0) \cup (0, \infty)$

Range: $(-\infty, 0) \cup (0, \infty)$

x - intercept: \emptyset

y - intercept: \emptyset

Symmetry: **ODD**

Max: \emptyset

Min: \emptyset

Increasing: \emptyset

Decreasing: $(-\infty, 0) \cup (0, \infty)$

Vertical Asymptotes: $x = 0$

Horizontal Asymptotes: $y = 0$

