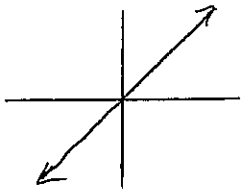
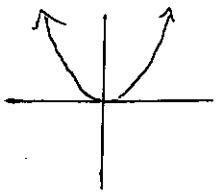
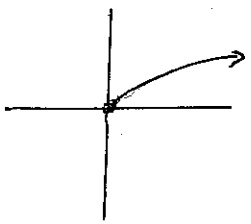
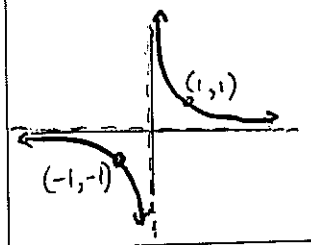
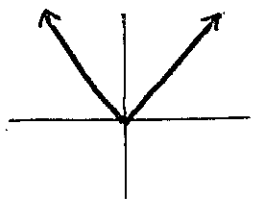
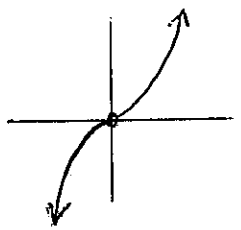
1.3 Properties of Parent Functions

Use 'Desmos' or a graphing calculator to help you sketch a graph of each parent/base function, then complete the table below:

Equation of parent/base fxn	Name of fxn	Graph Sketch	Special features/key points	Domain	range
$f(x) = x$	Linear fxn		Straight line that goes through the origin Slope is 1 Divides the plane in half diagonally Graph lies in Q1 and Q3 $(-1,-1),(0,0),(1,1)$	$x \in \mathbb{R}$	$y \in \mathbb{R}$
$f(x)=x^2$	Quadratic fxn		Parabola that opens up Vertex at (0,0) Y has a minimum value(zero) ~~Key Points:~~ (0,0), (1, 1), (2, 4)	$x \in \mathbb{R}$	$y \in \mathbb{R} \mid y \geq 0$
$f(x)=\sqrt{x}$	Square root fxn		Starts at (0,0) Key points $(1,1),(4,2)$	$x \in \mathbb{R} \mid x \geq 0$	$y \in \mathbb{R} \mid y \geq 0$

Equation of parent/base fxn	Name of fxn	Graph Sketch	Special features/key points	Domain	range
$f(x) = 1/x$	Reciprocal fxn		A Horizontal Asymptote (H.A.) is $y=0$ A Vertical Asymptote (V.A.) is $x=0$ $(-1,-1)$ $(1,1)$	$x \in \mathbb{R} \mid x \neq 0$	$y \in \mathbb{R} \mid y \neq 0$
$f(x) = \lvert x \rvert$	Absolute Value fxn		Key Points $(0,0)$ ← vertex $(1,1)$ $(2,2)$	$x \in \mathbb{R}$	$y \in \mathbb{R} \mid y \geq 0$
$f(x) = x^3$	Cubic fxn		Inflection at $(0,0)$ upward to downward U shape Other key Points: $(-1,-1), (1,1)$	$x \in \mathbb{R}$	$y \in \mathbb{R}$

An Asymptote - A line or curve that the graph of a relation or function gets closer and closer to, but never meets.

Absolute Value - Written as $|x|$, describes the distance of x from 0.

eg. $|3| = 3$, $|-3| = 3$