

Warm - Up

Identify the transformations:

1) $y = \sin(x + 5) - 7$
Left 5 Down 7

2) $y = -\cos(x - 3)$
Ref Right 3

3) $y = -\sin(x) + 8$
Ref Up 8

4) $y = \cos(x - 4) + 1$
Right 4 Up 1

To start Unit 5 we will identify these transformations in other functions.

Unit 5:
Functions Part I

Parent Functions

	Type	Transformation(s)
$y = (x+2)^2 - 5$	Quadratic	Down 5, Left 2
$y = -(x+7)^3 + 9$	Cubic	Reflection, Up 9, Left 7
$y = x-1 + 8$	Absolute Value	Up 8, Right 1
$y = -\sqrt{x+3} - 4$	Square Root	Reflection, Down 4, Left 3
$y = 2^{x-6} + 1$	Exponential	Up 1, Right 6
$y = \log(x+2) - 7$	Logarithmic	Down 7, Left 2
$y = \frac{1}{x-9} - 8$	Rational	Down 8, Right 9

Later Unit

Domain --

What x values will the function be able to use (provide an output)

***Visually - Left and Right**

All Real Numbers $\rightarrow \mathbb{R}$

Range --

What outputs (y values) are possible

***Visually - Up and Down**

Quadratic

General Shape

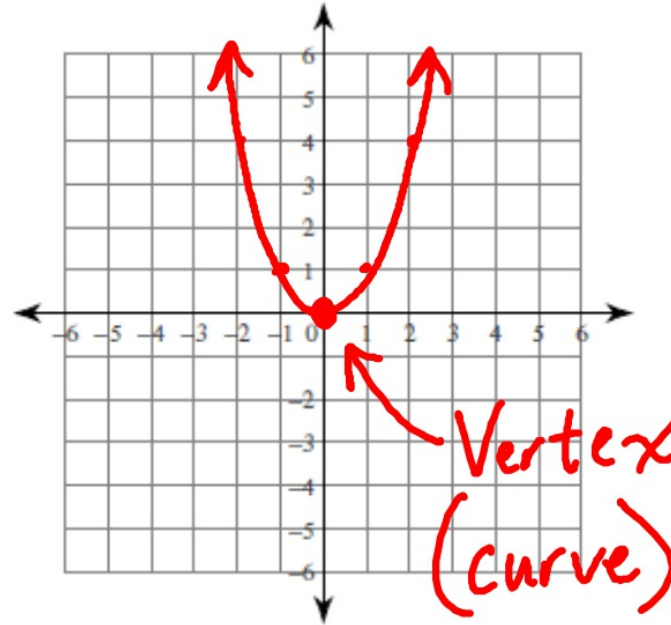
Parabola

Domain

\mathbb{R}

Range

(Ref) $y \geq V.S.$
 $y \leq VS$



Cubic

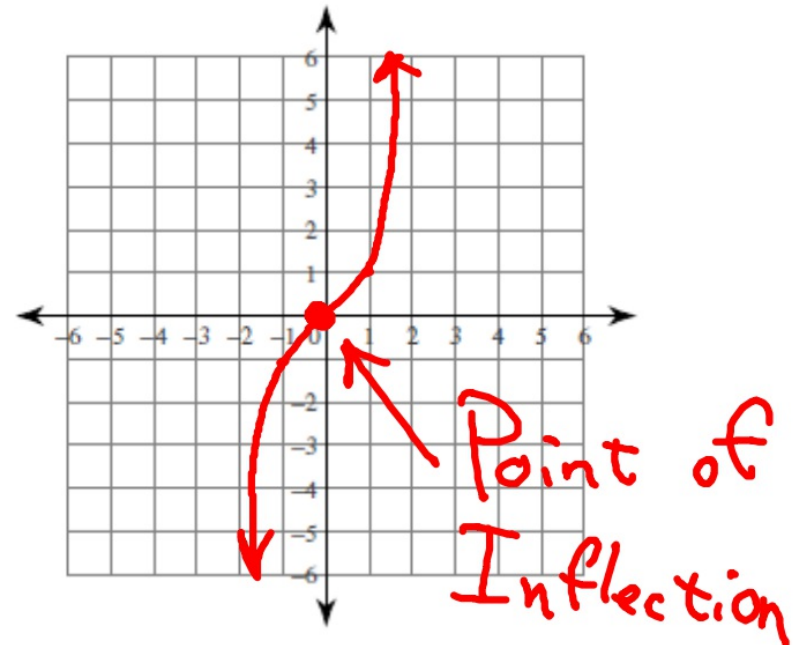
General Shape

Domain

\mathbb{R}

Range

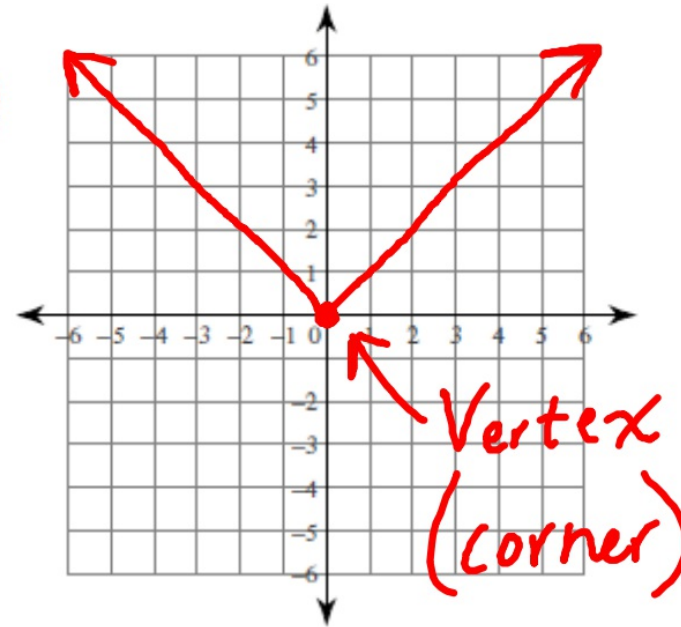
\mathbb{R}



Absolute Value

General Shape

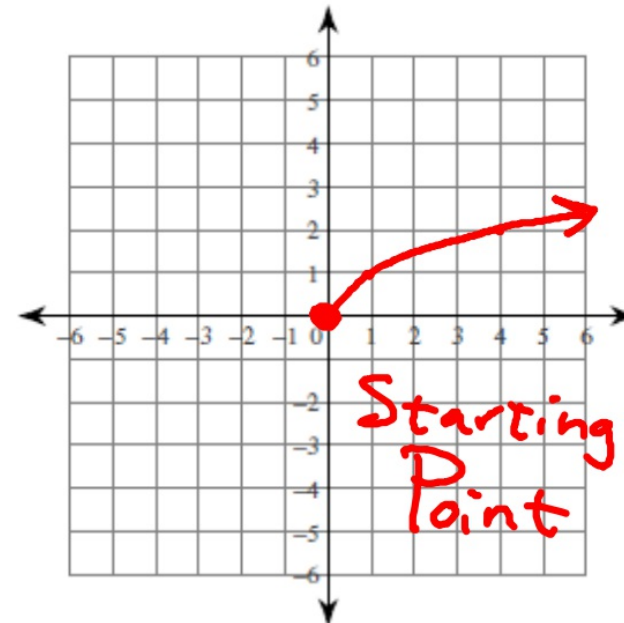
Domain \mathbb{R}
Range (Ref) $y \geq VS$
 $y \leq VS$



Square Root

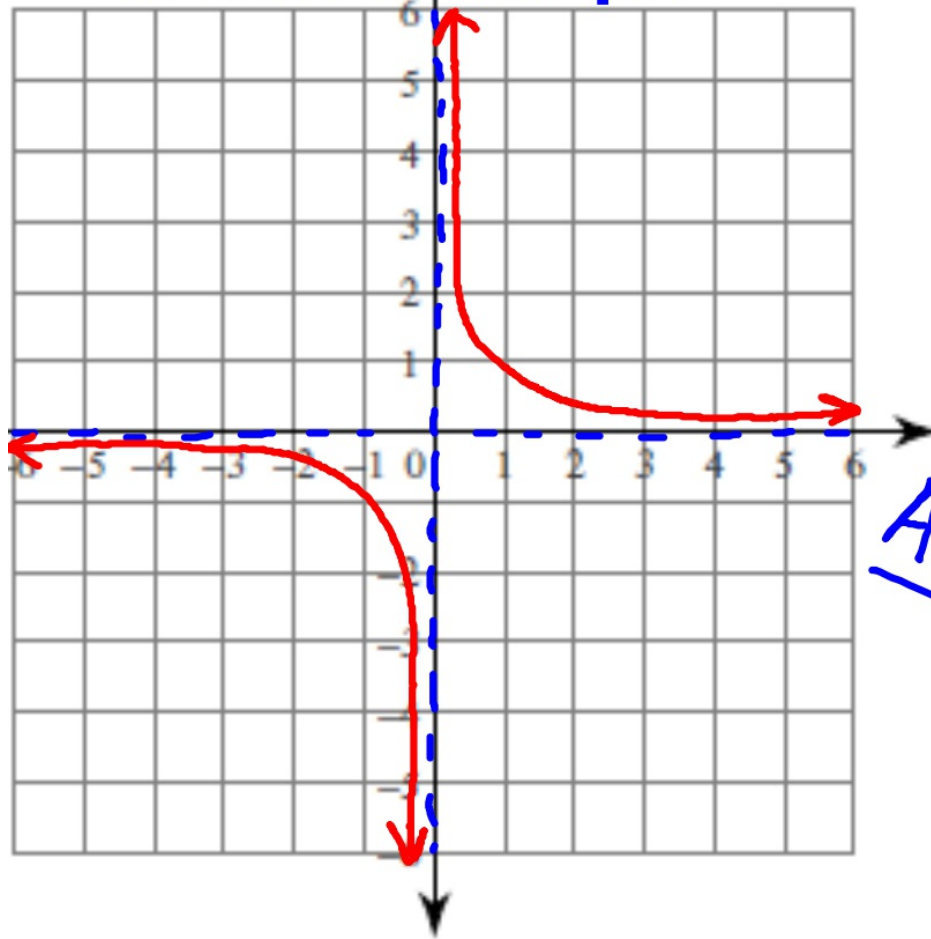
General Shape

Domain $x \geq HS$
Range $y \geq VS$



Rational $y = \frac{1}{x}$

General Shape



Domain

$$x \neq HS$$

Range

$$y \neq VS$$

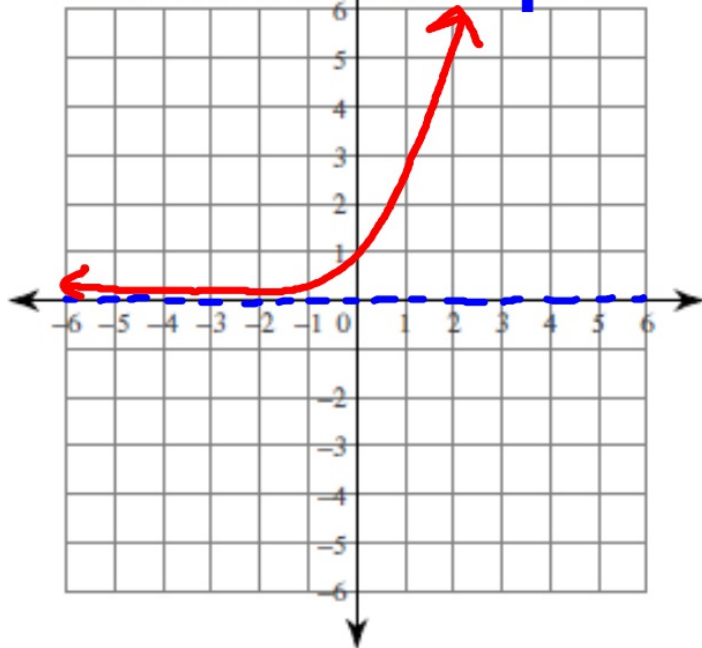
Asymptotes

Exponential and Logarithm

Domain \mathbb{R}

Range $y > 0$

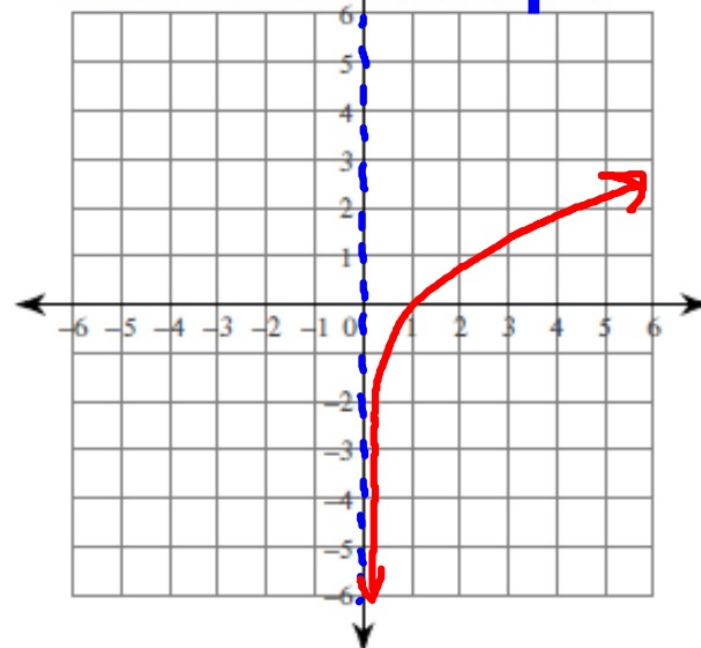
General Shape



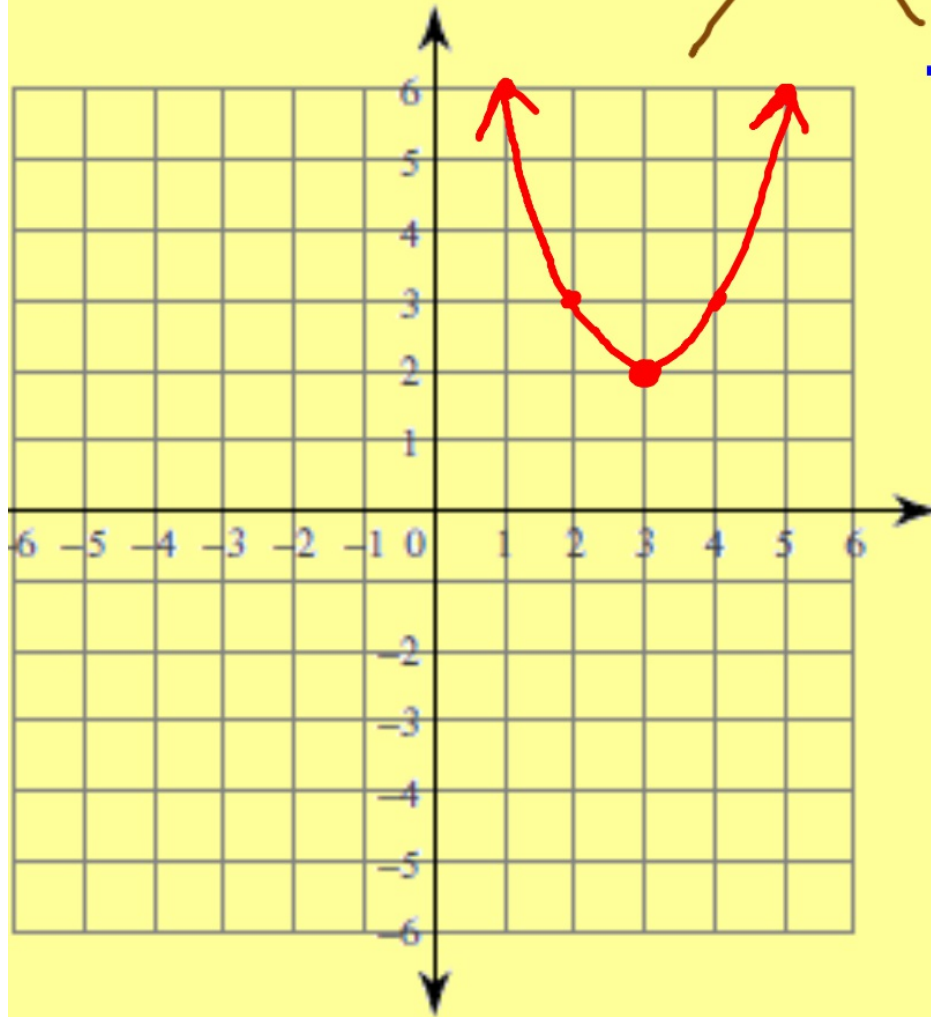
Domain $x > 0$

Range \mathbb{R}

General Shape



$$y = (x - 3)^2 + 2$$



Type Quadratic

Transformations

Right 3

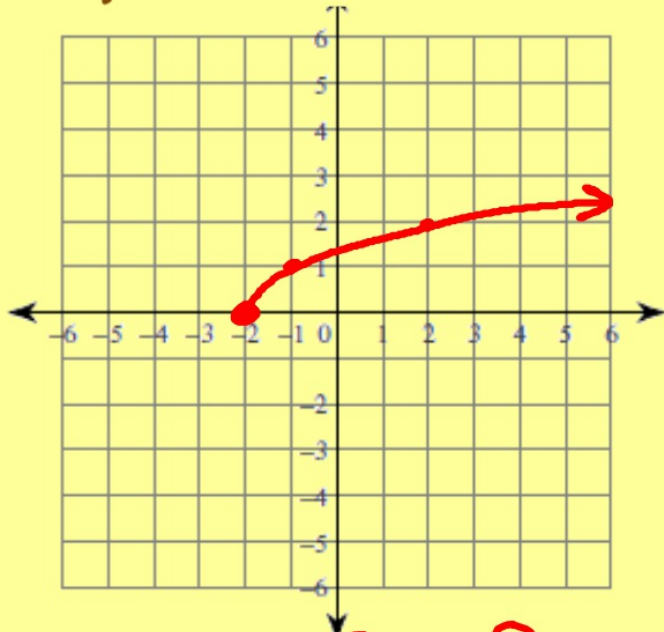
Up 2

Domain

\mathbb{R}

Range $y \geq 2$

$$y = \sqrt{x+2}$$



Type *Sq. Root*

Transformations

Left 2

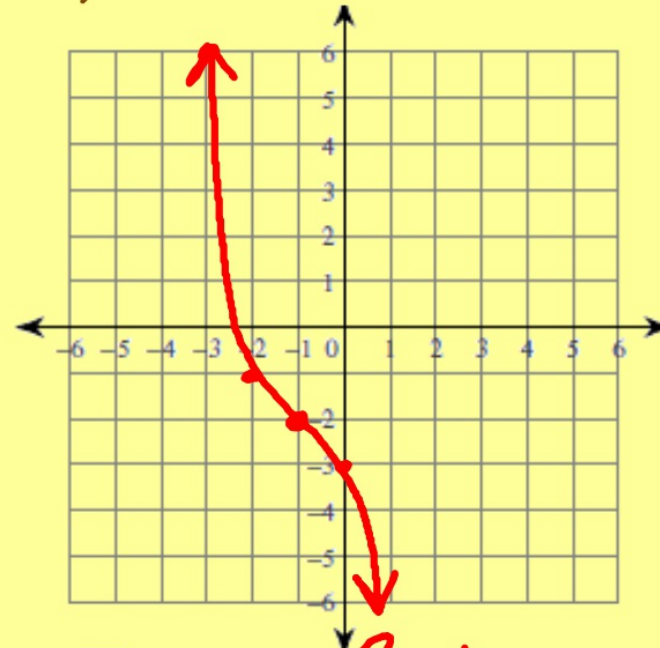
Domain

$$x \geq -2$$

Range

$$y \geq 0$$

$$y = -(x+1)^3 - 2$$



Type *Cubic*

Transformations

Ref, Left 1 + Down 2

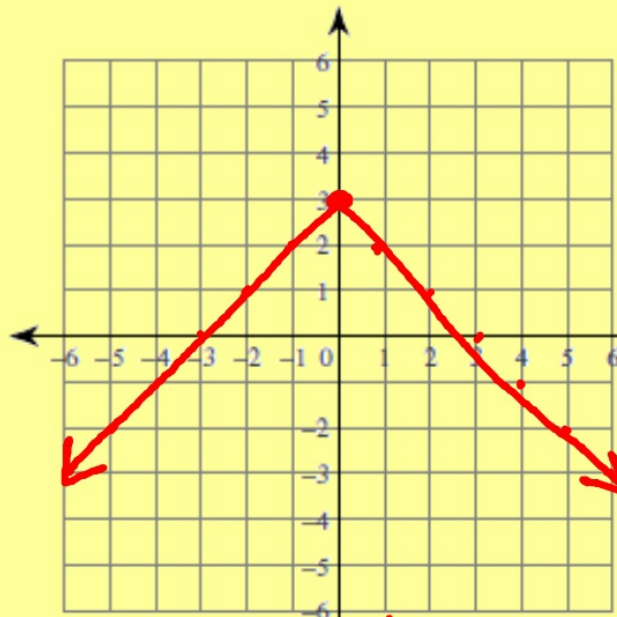
Domain

$$\mathbb{R}$$

Range

$$\mathbb{R}$$

$$y = -|x| + 3$$



Math
→ Num
D abs

Type *Abs. Value*

Transformations

Ref + Up 3

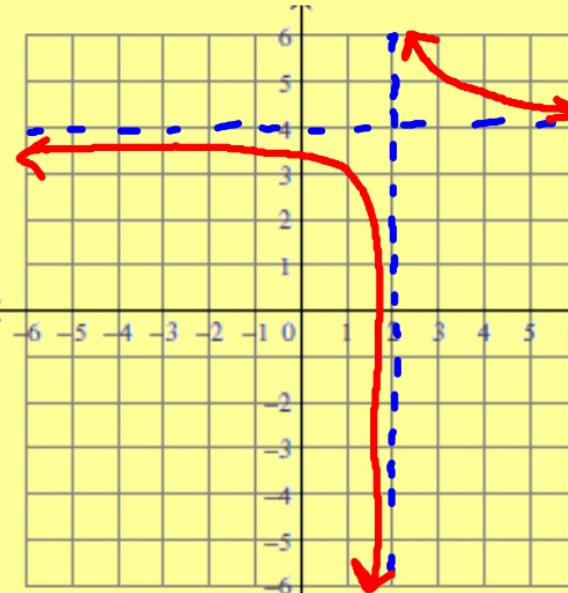
Domain

\mathbb{R}

Range

$y \leq 3$

$$y = \frac{1}{x-2} + 4$$



Alpha
 $y =$
1st

Type *Rational*

Transformations

Right 2 + Up 4

Domain

$x \neq 2$

Range

$y \neq 4$

WS 501

#1-4, 6 and 8

E.C. for All