
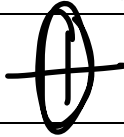


**KEY**

**More Characteristics**

**Intercepts**

	x- intercept	y- intercept
Definition	The points where the graph crosses the x-axis	The point where the graph crosses the y-axis
Graphically	 (x, 0)	 (0, y)
Algebraically	Substitute y=0, solve for x.	Substitute x=0, solve for y.

Find the x and y intercepts of the following functions.

1.  $-3x + 2y = 12$

$-3x + 2(0) = 12$   
 $-3x = 12$   
 $\frac{-3x}{-3} = \frac{12}{-3}$   
 $x = -4$

$-3(0) + 2y = 12$   
 $2y = 12$   
 $\frac{2y}{2} = \frac{12}{2}$   
 $y = 6$   
 Intercepts:  $(-4, 0)$  and  $(0, 6)$

2.  $4x - 5y = 20$

$4x - 5(0) = 20$   
 $4x = 20$   
 $x = 5$

$4(0) - 5y = 20$   
 $-5y = 20$   
 $y = -4$   
 Intercepts:  $(5, 0)$  and  $(0, -4)$

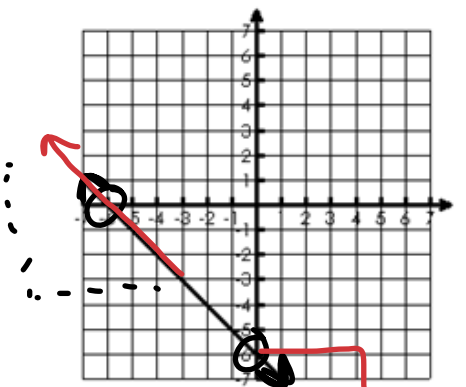
**Increasing/ Decreasing**

Increasing	Decreasing	Constant
Goes up (L to R)	Goes Down from L to R	horizontal

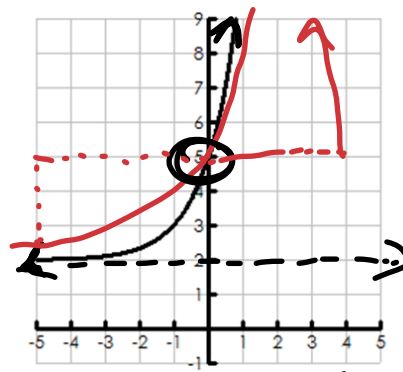
**End Behavior**

$x \rightarrow \text{---}, y \rightarrow \text{---}$

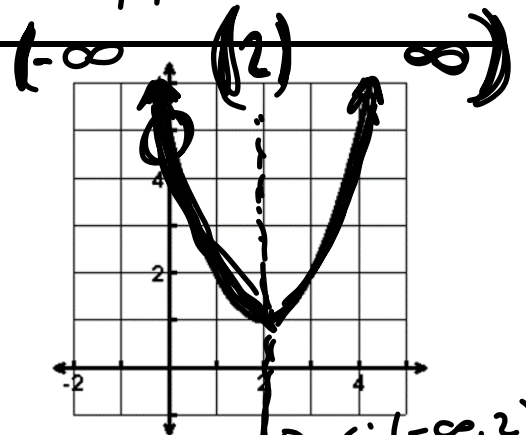
$x \rightarrow \text{---}, y \rightarrow \text{---}$



Inc or Dec? **Decreasing**  
 Intercepts?  $(-6, 0)(0, -6)$   
 End behavior:



Inc or Dec? **Increasing**  
 Intercepts?  $(0, 5)$   
 End behavior:



Inc or Dec? **Dec:  $(-\infty, 2)$  Inc:  $(2, \infty)$**   
 Intercepts?  $(0, 5)$   
 End behavior:

$x \rightarrow -\infty, y \rightarrow \infty$

$x \rightarrow \infty, y \rightarrow -\infty$

$x \rightarrow -\infty, y \rightarrow 2$   
 left

$x \rightarrow \infty, y \rightarrow \infty$   
 right

$x \rightarrow -\infty, y \rightarrow \infty$

$x \rightarrow \infty, y \rightarrow \infty$

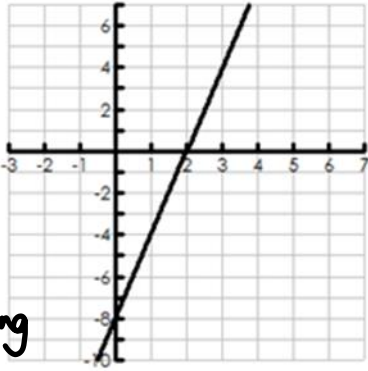
1.

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

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

Intercepts:  
 x-int:  $(2, 0)$   
 y-int:  $(0, -8)$

Increasing or Decreasing: **Increasing**



End behavior:  
 $x \rightarrow -\infty, y \rightarrow -\infty$   
 $x \rightarrow \infty, y \rightarrow \infty$

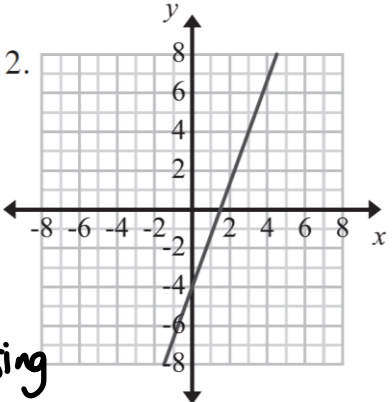
2.

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

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

Intercepts:  
 x-int:  $(1.5, 0)$   
 y-int:  $(0, -4)$

Increasing or Decreasing: **Increasing**



End behavior:  
 $x \rightarrow -\infty, y \rightarrow -\infty$   
 $x \rightarrow \infty, y \rightarrow \infty$

3.

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

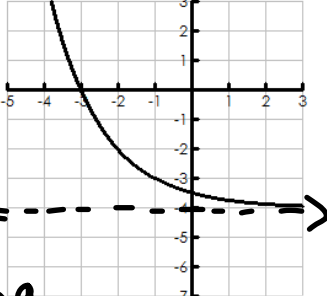
Range:  $(-4, \infty)$

Asymptote:  $y = -4$

X-intercept:  $(-3, 0)$

Y-intercept:  $(0, -3.5)$

Increasing or Decreasing: **Decreasing**



End behavior:  
 $x \rightarrow -\infty, y \rightarrow \infty$   
 $x \rightarrow \infty, y \rightarrow -4$

4.

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

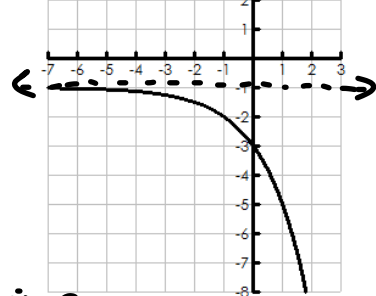
Range:  $(-\infty, -1)$

Asymptote:  $y = -1$

X-intercept: **None**

Y-intercept:  $(0, -3)$

Increasing or Decreasing: **Decreasing**



End behavior:  
 $x \rightarrow -\infty, y \rightarrow -1$   
 $x \rightarrow \infty, y \rightarrow -\infty$

5.

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

Range:  $[-9, \infty)$

Intercepts: x-int:  $(-1, 0)$   
 y-int:  $(0, -5)$   
 $(3, 0)$

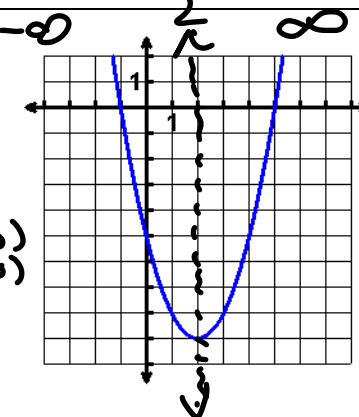
A.O.S.:  $x = 2$

Vertex:  $(2, -9)$

Increasing:  $(2, \infty)$

Decreasing:  $(-\infty, 2)$

End behavior:  
 $x \rightarrow -\infty, y \rightarrow \infty$   
 $x \rightarrow \infty, y \rightarrow \infty$



6.

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

Range:  $(-\infty, 0)$

Intercepts: x-int:  $(3, 0)$   
 y-int:  $(0, 9)$

A.O.S.:  $x = 3$

Vertex:  $(3, 0)$

Increasing:  $(-\infty, 3)$

Decreasing:  $(3, \infty)$

End behavior:  
 $x \rightarrow -\infty, y \rightarrow -\infty$   
 $x \rightarrow \infty, y \rightarrow -\infty$

