Notation

* All real numbers

$(-\infty, \infty)$

$\mathbb{R}$

Domain: x-values

* left to right
* Most Domains will be all real numbers

$\mathbb{R}$ or $(-\infty, \infty)$

Range: y-values

Bottom to top

Increase or **Decrease**

Read left to right

End Behavior

- Look at the arrows
- what is the graph doing at the end?

going up $+\infty$

going down $-\infty$

As $x \to +\infty$ (right arrow), $y \to +\infty$

$x \to -\infty$ (left arrow), $y \to -\infty$

GSE Algebra – Characteristics of Linear Functions – Notes

Name: _____ Date: _____

Characteristics of Functions

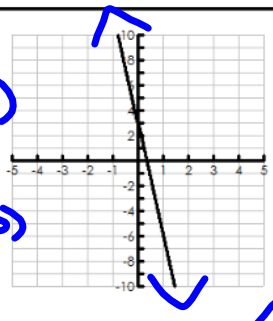
Domain and Range

- Discrete Graphs: you just list the domain and range.
- Continuous Graphs: you use Inequalities or Brackets
  - >, <, ( ) : are used when there is an open dot or the number is NOT included on the graph.
  - ≥, ≤, [ ] : are used when there is a closed dot or when the number is included on the graph.

On Your Own:

1. Domain: ℝ (−∞, ∞)

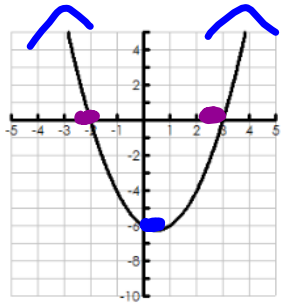
   Range: ℝ (−∞, ∞)



Decrease

2. Domain: ℝ ; (−∞, ∞)

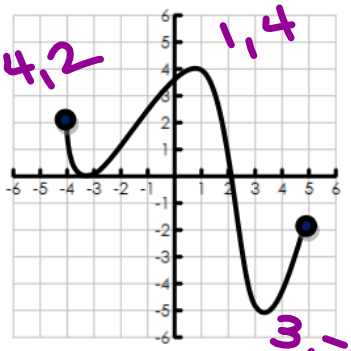
   Range: [(−6, ∞) y ≥ −6



(.5, −6)

3. Domain: [−4, 5] −4, 2

   Range: [−5, 4]



1, 4

5, −2

3, −5

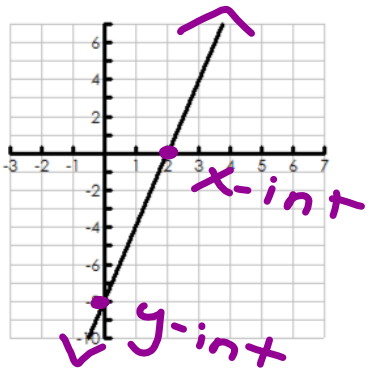
GSE Algebra – Characteristics of Linear Functions – Notes

Intercepts

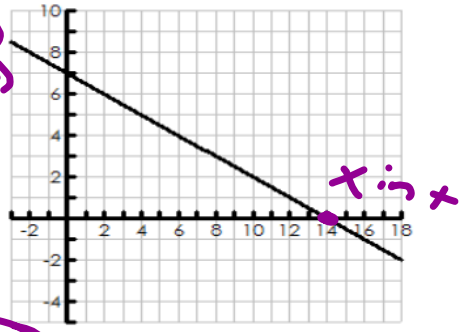
- x-intercept: the point at which the line intersects the X-axis at **(x,0)**.
- y-intercept: the point at which the line intersects the y-axis at **(0,y)**.
- Zeros are the same thing as the x-intercepts

On Your Own:

1. Domain: $(-\infty,\infty)$ or $\mathbb{R}$
   Range: $(-\infty,\infty)$ or $\mathbb{R}$
   x-int: $(2,0)$
   y-int: $(0,-8)$
   End Behavior:
   As x → ∞, y → $+\infty$
   As x → -∞, y → $-\infty$
   Is the graph increasing or decreasing?

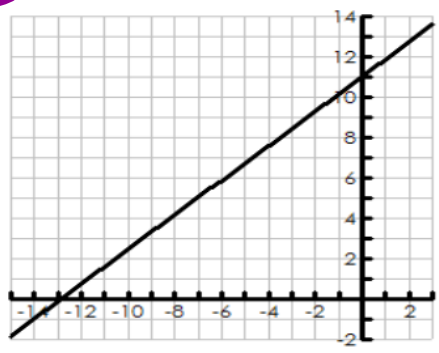


2. Domain: $\mathbb{R}$ or $(-\infty,\infty)$
   Range: $\mathbb{R}$ or $(-\infty,\infty)$
   x-int: $(14,0)$
   y-int: $(0,7)$



End Behavior:
As x → ∞, y → $-\infty$
As x → -∞, y → $+\infty$
Is the graph increasing or decreasing?

3. Domain: $\mathbb{R}$
   Range: $\mathbb{R}$
   x-int: $(-13,0)$
   y-int: $(0,11)$



End Behavior:
As x → ∞, y → $+\infty$
As x → -∞, y → $-\infty$
Is the graph increasing or decreasing?

GSE Algebra – Characteristics of Linear Functions – Notes
