Daily Quiz

Graph the following Linear equation.
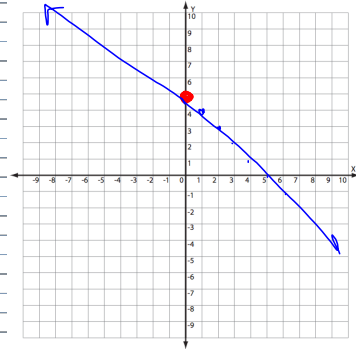
x+y=5

$-x = -x$

$y = mx+b$

$\rightarrow y = -x+5$

$b=5$

$m = -1 \downarrow$

$1 \rightarrow$

Mod 1:Lesson 1.1

Day 3 Identifying a function's Domain, range, & End Behavior

Objective: We will be able to determine the domain, range, and end behavior of a function.

End behavior of a function describes what happens to the $f(x)$-values as the x-values either increase without bound (approach positive infinity) or decrease without bound (approach negative infinity).

Statement of End Behavior	Symbolic Form of Statement
As the x-values increase without bound, the f(x)-values also increase without bound.	As $x \to +\infty$, $f(x) \to +\infty$.
As the x-values decrease without bound, the f(x)-values also decrease without bound.	As $x \to -\infty$, $f(x) \to -\infty$.

$f(x) \to y$

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1 Example

Write the domain and the range of the function using set notation and using interval notation. Also describe the end behavior of the function.

Domain:
Set notation: $X \in \mathbb{R}$

Interval notation: $(-\infty, \infty)$
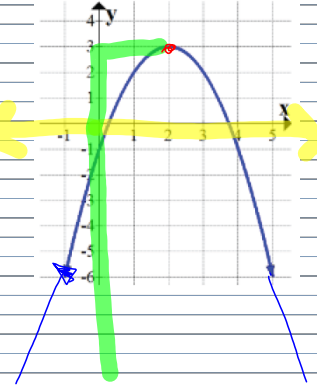
Range:
Set notation: $\{y \mid y \leq 3\}$

Interval notation: $(-\infty, 3]$

End behavior:
As x→ $-\infty$, $f(x) \to -\infty$

As x→ $+\infty$, $f(x) \to -\infty$

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2 Example

Write the domain and the range of the function using set notation and using interval notation. Also describe the end behavior of the function.
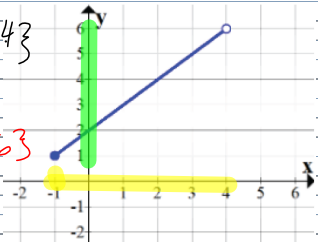
Domain:
Set notation: $\{x \mid -1 \leq x < 4\}$

Interval notation: $[-1, 4)$

Range:
Set notation: $\{y \mid 1 \leq y < 6\}$

Interval notation: $[1, 6)$

End behavior:
As x→

As x→

Since the function is bounded there is no end behavior.

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3 Example

Write the domain and the range of the function using set notation and using interval notation. Also describe the end behavior of the function.

Domain:
Set notation: $X \in \mathbb{R}$
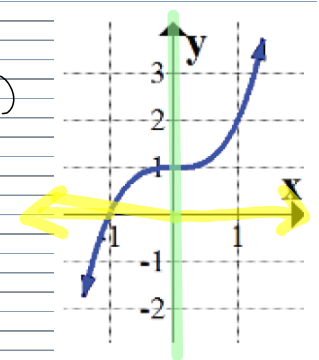
Interval notation: $(-\infty, \infty)$

Range:
Set notation: $y \in \mathbb{R}$

Interval notation: $(-\infty, \infty)$

End behavior:
As x→ $-\infty$, $f(x) \to -\infty$

As x→ $+\infty$, $f(x) \to +\infty$

④ Example

Write the domain and the range of the function using set notation and using interval notation. Also describe the end behavior of the function.

Domain:

Set notation: $\{x \mid -5 \leq x \leq 5\}$

Interval notation: $[-5, 5]$

Range:

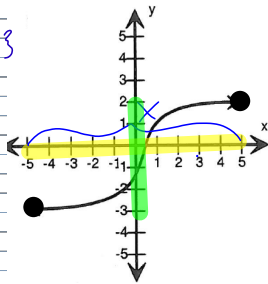Set notation: $\{y \mid -3 \leq y \leq 2\}$

Interval notation: $[-3, 2]$

End behavior:

As x→ the function is

As x→ bounded   so it has no end behavior

⑤ Example

For the given function and domain, draw the graph and identify the range using the same notation as the given domain.

$f(x) = -x - 2$ with domain $\{x \mid x > -3\}$

$m = \dfrac{-1}{1}$ b

Since f(x) = -x-2 is a linear function, the graph is a ray with its endpoint at _____ . The endpoint _____ included in the graph. The range is _____ .