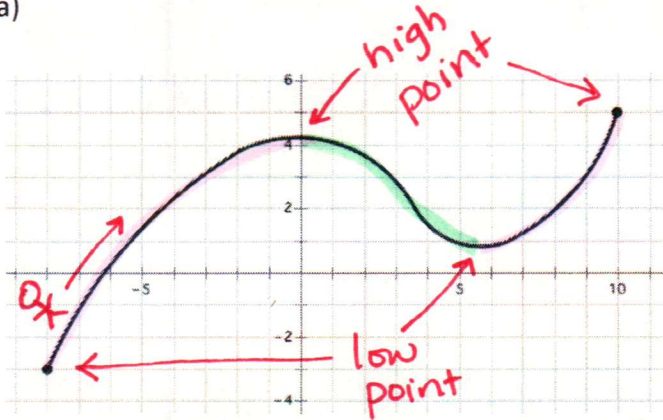


Notes 3.2 – Features of Functions

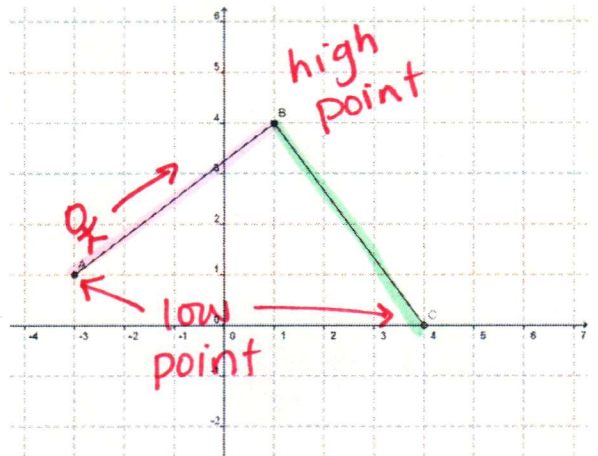
Warmup

For each graph, identify the positive, negative, zero slopes, and the highest and lowest points.

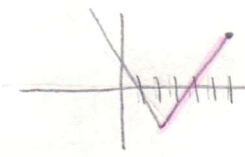
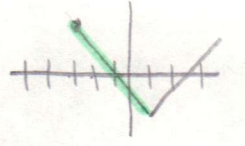
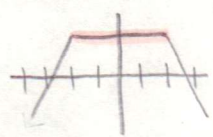
a)

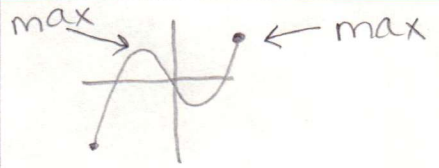
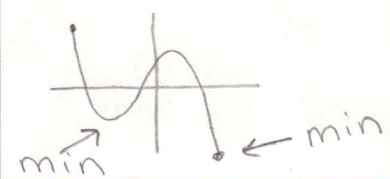
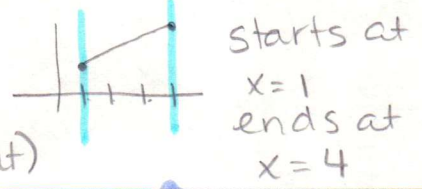
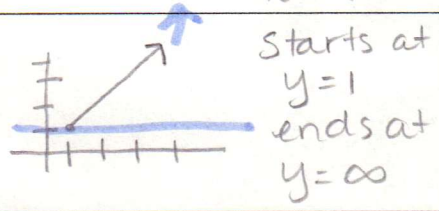


b)



Lesson

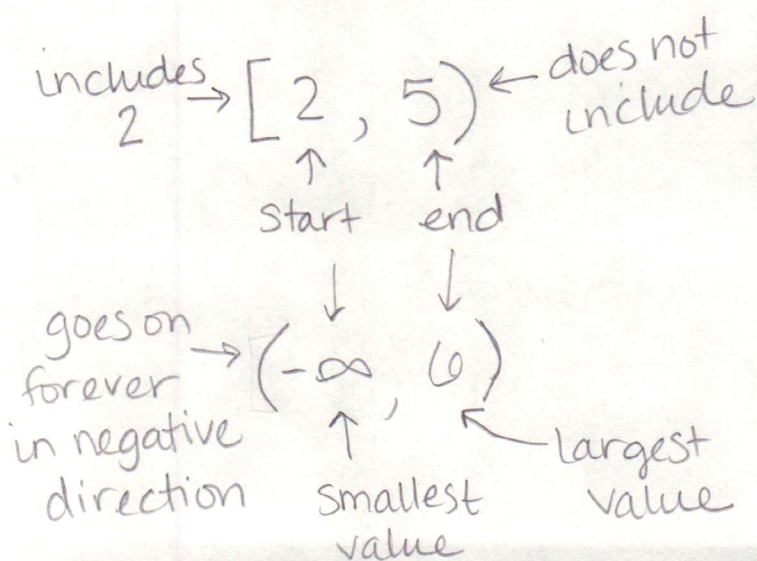
Word	Meaning/Notation	Example
Interval Notation	a way to show where an interval begins and ends	$[2, \infty)$ ← ends at ∞ ↑ starts at, and includes 2
Interval of Increase	the x values where the graph has a positive slope	 starts at $x=2$ ends at $x=6$
Interval of Decrease	the x values where the graph has a negative slope	 starts at $x=-3$ ends at $x=1$
Constant Interval	the x values where the graph has a zero slope	 starts at $x=-2$ ends at $x=2$

Word	Meaning/Notation	Example
Maximum Value	Any place where the graph has a high point (hill top or ending point)	
Minimum Value	Any place where the graph has a low point (valley or ending point)	
Domain	the set of all possible inputs - x's (where the graph is left to right)	
Range	the set of all possible outputs - y's (where the graph is bottom to top)	

Interval Notation:

Always has two numbers, start and end
 Surrounded by parenthesis or brackets
 Brackets include the value []

Parenthesis do not include the value, ∞ always is uses ()

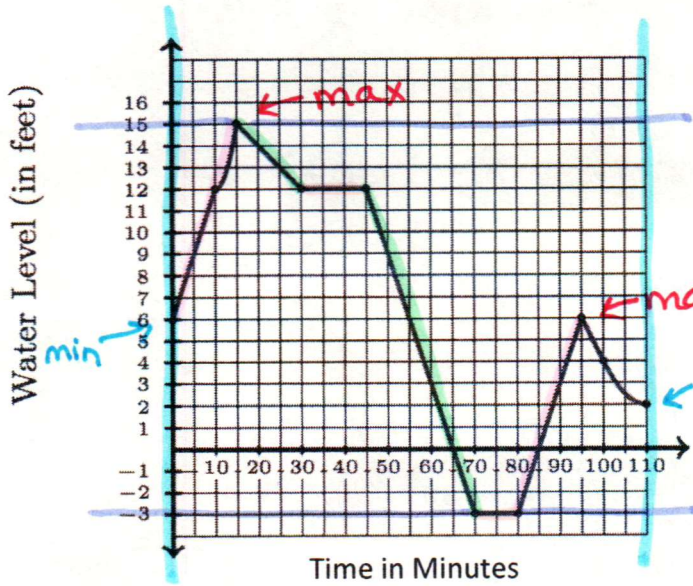


only domain and range use brackets

Highlight the positive slope, negative slope, and zero slope in 3 different colors.

Label the highest and lowest places on the graph.

\cup ← joins 2 intervals



Intervals of Increase:

$$(0, 15) \cup (80, 95)$$

Intervals of Decrease:

$$(15, 30) \cup (45, 70)$$

Constant Intervals:

$$(30, 45) \cup (70, 80)$$

Maximum:

$$(15, 15) \text{ and } (95, 6)$$

Minimum:

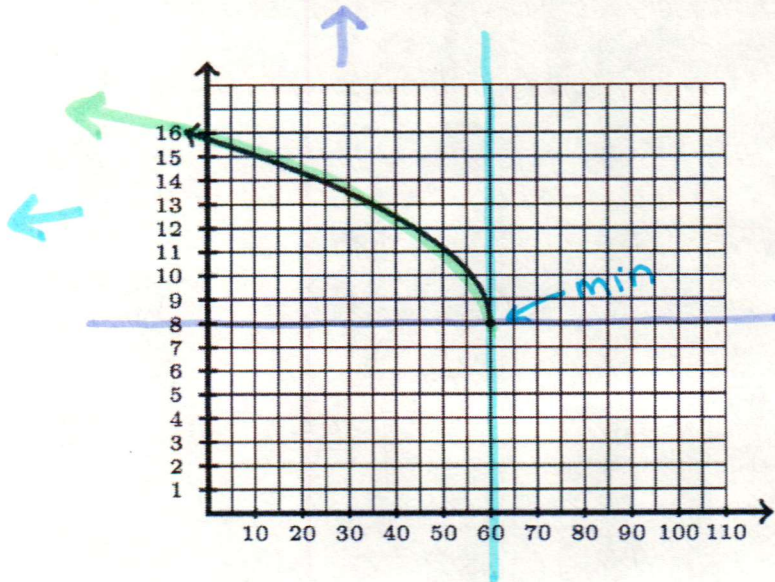
$$(0, 6) \text{ and } (110, 2)$$

Domain:

$$[0, 110]$$

Range:

$$[-3, 15]$$



Intervals of Increase:

none

Intervals of Decrease:

$$(-\infty, 60)$$

Constant Intervals:

Maximum:

none

Minimum:

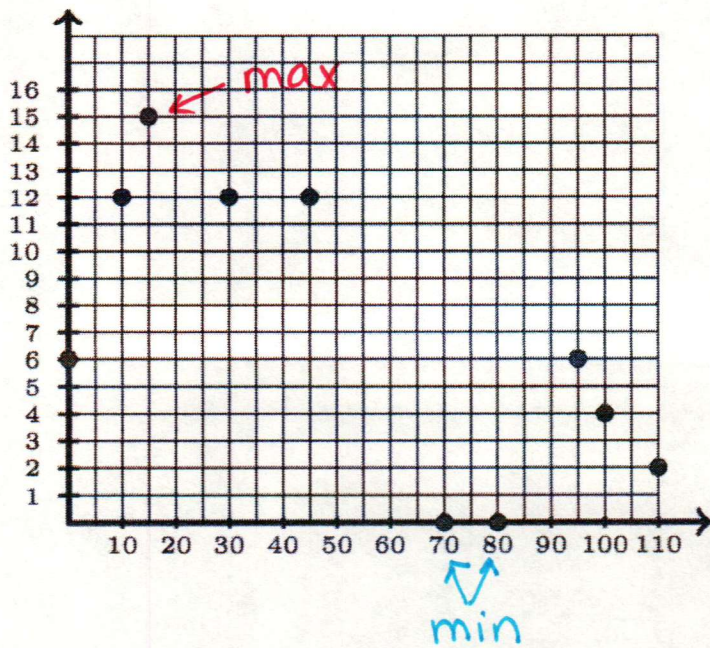
$$(60, 8)$$

Domain:

$$(-\infty, 60]$$

Range:

$$[8, \infty)$$



Intervals of Increase:

none

Intervals of Decrease:

none

Constant Intervals:

none

} discrete graphs do not have intervals

Maximum: (15, 15)

Minimum: (70, 0) and (80, 0)

Domain:

$x = 0, 10, 15, 30, 45, 70, 80, 95, 100, 110$

Range:

$y = 0, 2, 4, 6, 12, 15$

only listed once

On a continuous graph and endpoint with a \bullet means the number is included and you use a bracket.

An \circ means the number is not included and you use a parenthesis.

