

11.3.D1 - CHARACTERISTICS OF QUADRATIC FUNCTIONS

Calculate the first and second differences for each table of values. Describe the type of function represented by the table: linear or quadratic. Refer to the 11.2 example "Identifying Linear & Quadratic Functions" in the Chapter 11 Summary.

1.

x	y	FIRST DIFFERENCES	SECOND DIFFERENCES
0	-2		
1	1	_____	
2	4	_____	_____
3	7	_____	
4	10		

2.

x	y	FIRST DIFFERENCES	SECOND DIFFERENCES
0	1		
1	-1	_____	
2	-7	_____	_____
3	-17	_____	
4	-31		

A family is building a rectangular patio onto the back of their house. The perimeter of the three sides of the patio is 20 feet.

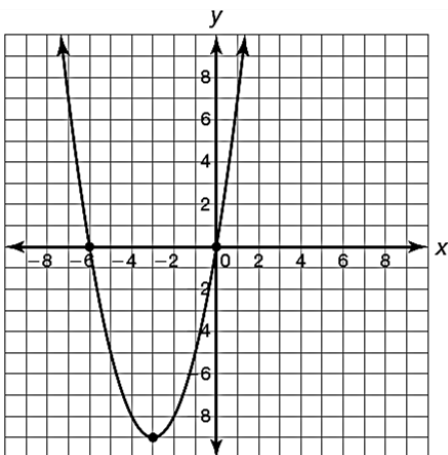
3. Write an expression that represents the length in terms of the width, x . Then write a quadratic function in standard form that represents the area, A , as a function of the width. Refer to the 11.1 example "Writing Quadratic Functions in Standard Form" in the Chapter 11 Summary.

If $x =$ the width, then the length = _____ & the area, $A =$ _____

4. Use a graphing calculator to determine the absolute maximum or minimum of this function. Describe what it means in terms of the problem situation. Refer to the 11.1 example "Identifying Maximums & Minimums of Quadratic Graphs" in the Chapter 11 Summary.

For each function shown, identify the domain, range, maximum or minimum, y -intercept, zeros, and the intervals of increase and decrease. Refer to the THREE 11.3 examples "Identifying/Determining Domain & Range/ Zeros/Intervals of Increase & Decrease of a Quadratic Function" in the Chapter 11 Summary.

5. $f(x) = x^2 + 6x$



Domain: _____

Range: _____

Maximum or Minimum: _____

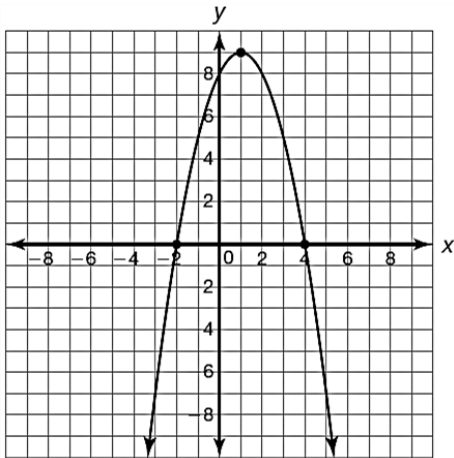
y -intercept: _____

Zeros: _____

Interval of increase: _____

Interval of decrease: _____

6. $f(x) = -x^2 + 2x + 8$



Domain: _____

Range: _____

Maximum or Minimum: _____

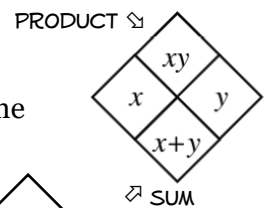
y -intercept: _____

Zeros: _____

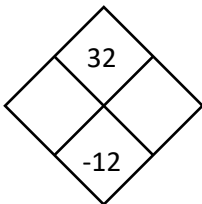
Interval of increase: _____

Interval of decrease: _____

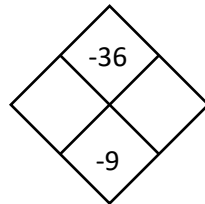
An X-box is a pattern for which the product of two numbers is placed on top, while the sum of the same two numbers is placed on the bottom. This pattern is demonstrated in the X-box at right. Copy and complete each X-box pattern below.



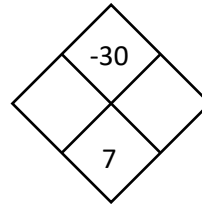
7.



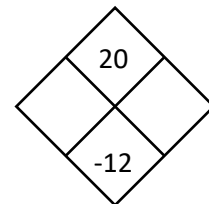
8.



9.



10.



1ST SEMESTER SPIRAL REVIEW – Refer to your 1st semester summary card.

Solve each system of equations using the appropriate method. Write your solution as an ordered pair: (x, y) .

11.
$$\begin{cases} x - 3y = -3 \\ -2x + 7y = 10 \end{cases}$$

12.
$$\begin{cases} y = -2x + 9 \\ 3x - 4y = 8 \end{cases}$$

13.
$$\begin{cases} 3x + y = -2 \\ y = 8 + 2x \end{cases}$$

14.
$$\begin{cases} -2x - 6y = 0 \\ 3x + 11y = 4 \end{cases}$$