

11.REV.2 - LESSONS 11.1 - 11.6

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.

- Jimmy is designing a rectangular parking lot. He has 600 feet of fencing to enclose the parking lot around **all 4** sides.

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

- Johnny is designing a rectangular parking lot. He has 600 feet of fencing to enclose the parking lot around **three** sides.

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

Calculate the first and second differences for each table of values. Describe the type of function represented by the table: increasing linear, decreasing linear, positive quadratic or negative quadratic.

3.

x	y	FIRST DIFFERENCES	SECOND DIFFERENCES
-2	-1		
-1	-2	_____	
0	-1	_____	_____
1	2	_____	_____
2	7		

4.

x	y	FIRST DIFFERENCES	SECOND DIFFERENCES
-2	11		
-1	8	_____	
0	5	_____	_____
1	2	_____	_____
2	-1		

Determine the axis of symmetry of each parabola.

- The x -intercepts of a parabola are $(-2, 0)$ & $(16, 0)$.
- Two symmetric points on a parabola are $(-14, 18)$ & $(22, 18)$.

Determine the vertex of each parabola.

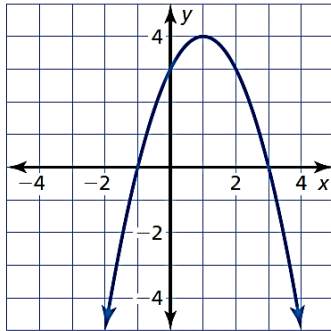
- $f(x) = x^2 + 2x - 15$
axis of symmetry: $x = -3$
- $f(x) = -x^2 + 4x - 12$
Two symmetric points: $(9, 14)$ & $(-21, 14)$

Determine another point on each parabola.

- point: $(-1, 4)$; axis of symmetry: $x = -3$
- point: $(-5, -2)$; vertex: $(-13, -1)$

Identify the characteristics of the parabola. Then, write the function in factored form and vertex form.

11. $f(x) = -x^2 + 2x + 3$



Domain:

Range:

Axis of symmetry:

Vertex:

Zeros:

y -intercept:

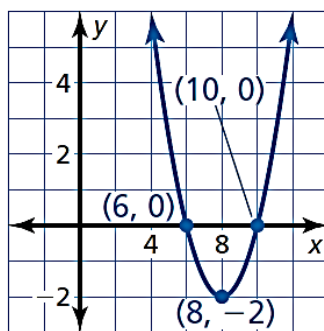
Interval of increase:

Interval of decrease:

Function in factored form:

Function in vertex form:

12. $f(x) = 2x^2 - 32x + 120$



Domain:

Range:

Axis of symmetry:

Vertex:

Zeros:

y -intercept:

Interval of increase:

Interval of decrease:

Function in factored form:

Function in vertex form:

Write a quadratic function in the appropriate form with each set of given characteristics. **Let $a = \pm 4$.**

13. Opens downward & has x -intercepts $(10, 0)$ & $(-6, 0)$

14. Opens upward & has a vertex at $(-1, 8)$

15. Opens downward & has a vertex at $(3, -6)$

16. Opens upward & has x -intercepts $(-12, 0)$ & $(-9, 0)$

Identify the characteristics of the quadratic function using only its equation.

17. $f(x) = -3(x + 3)(x + 1)$

Direction of opening:

Zeros:

Use the zeros to find the axis of symmetry:
 $x = h$

Evaluate the function at h , to find k . What are the coordinates of the vertex?

18. $g(x) = 4(x + 3)^2 + 1$

Direction of opening:

Axis of symmetry:

Vertex:

Evaluate the function for $x = 0$. What is the y -intercept?