

# 10.1 Intro to Quadratics

# NOTES

## ALGEBRA

Write your questions here!



Quadratics:

Standard Form:

Factored Form:

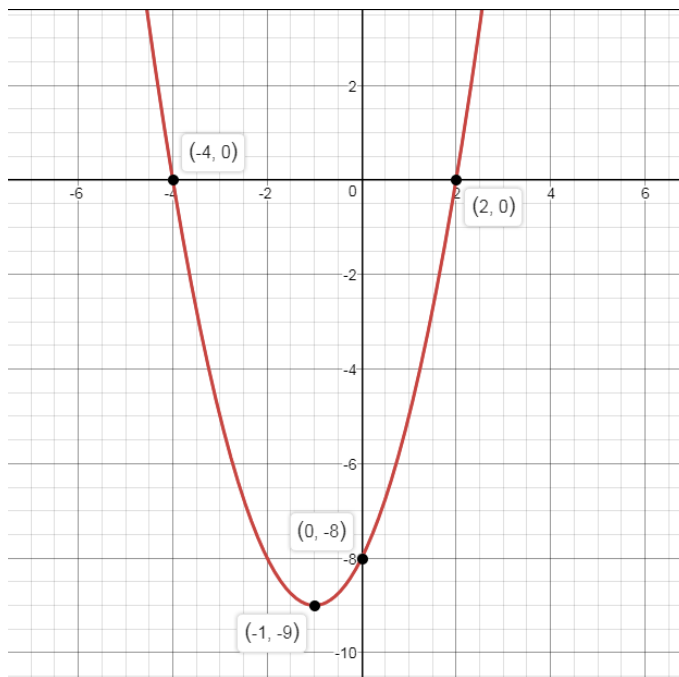
Characteristics of Quadratics:

x-intercepts:

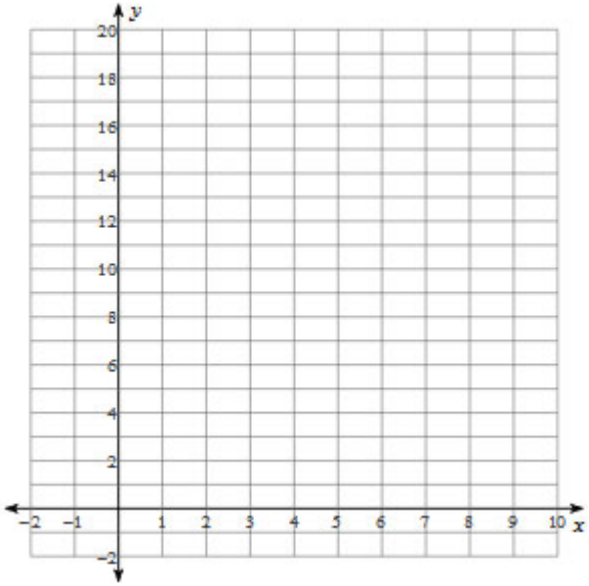
y-intercept:

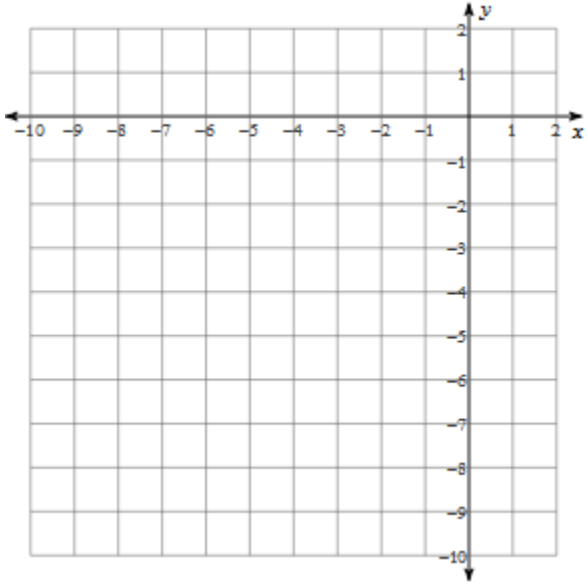
Axis of Symmetry:

Vertex:



Equation in Standard Form:	$F(x)=x^2 + 2x - 8$	Equation in Factored Form:	
x-intercepts:		y-intercept:	
Leading Coefficient:		Axis of Symmetry:	
Parabola opens which way:		Point symmetric to y-intercept:	
Vertex:		Vertex represents a Minimum or Maximum:	
Increasing and Decreasing Intervals:		Average Rate of Change on an interval:	$[-1, 0] =$ $[0, 1] =$ $[1, 2] =$

Equation in Standard Form:			
Equation in Factored Form:			
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:		Vertex represents a Minimum or Maximum:	
Parabola opens which way:		Vertex:	
Increasing and Decreasing Intervals:		Average Rate of Change on an interval:	[4,5]= [5,6]= [6,7]=

Equation in Standard Form:	$F(x) = -x^2 - 4x - 4$		
Equation in Factored Form:			
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:		Vertex represents a Minimum or Maximum:	
Parabola opens which way:		Vertex:	
Increasing and Decreasing Intervals:		Average Rate of Change on an interval:	[-2,-1]= [-1,0]= [0,1]=

# SUMMARY:

Now, summarize your notes here!

## 10.1 Intro to Quadratics

# PRACTICE

Directions: Fill in the empty boxes. Place info on graph and sketch graph.			
1) Equation in Standard Form:	$F(x) = x^2 + 2x - 3$		
Equation in Factored Form:			
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:		Vertex represents a Minimum or Maximum:	
Parabola opens which way:		Vertex:	

2) Equation in Standard Form:			
Equation in Factored Form:	$F(x) = (2x - 1)(2x + 1)$		
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:		Vertex represents a Minimum or Maximum:	
Parabola opens which way:		Vertex:	

3) Equation in Standard Form:	$F(x) = -x^2 + 4x + 12$		
Equation in Factored Form:			
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:		Vertex represents a Minimum or Maximum:	
Parabola opens which way:		Vertex:	

4) Equation in Standard Form:			
Equation in Factored Form:	$F(x) = (x + 3)(x + 5)$		
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:		Vertex represents a Minimum or Maximum:	
Parabola opens which way:		Vertex:	

**Directions: For each equation, identify the initial value (I.V.) and the percent increase or decrease.**

5) $f(x) = 100(1.75)^x$	6) $f(x) = 0.7(3.106)^x$	7) $f(x) = 8(0.75)^x$
I.V. _____	I.V. _____	I.V. _____
% Inc/Dec: _____	% Inc/Dec: _____	% Inc/Dec: _____

8) Equation in Standard Form:			
Equation in Factored Form:	$F(x) = -2(x + 4)(x + 2)$		
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:			
Parabola opens which way:		Vertex:	
9) Equation in Standard Form:	$F(x) = x^2 + 7x + 12$		
Equation in Factored Form:			
x-intercepts:			
y-intercept:			
Point symmetric to y-intercept:			
Leading Coefficient:			
Axis of Symmetry:			
Parabola opens which way:		Vertex:	
<b>Directions: Solve.</b>	<b>Directions: Solve the system.</b>	<b>Directions: Find x, when <math>f(x) = 5</math>.</b>	
10) $\frac{w-6}{4} + 2 = 10$	11) $3x + y = -2$ $9x + 3y = 3$	12) $f(x) = 2x - 15$	

1) The following tables represent a quadratic function. The vertex is highlighted. Use the table to answer the questions.

a)

X	F(x)
-3	12
-2	7
-1	4
0	3
1	4
2	7
3	12

b)

X	F(x)
-6	-5
-5	0
-4	3
-3	4
-2	3
-1	0
0	-5

c)

X	F(x)
-1	22
0	12
1	6
2	4
3	6
4	12
5	22

b) Find the average rate of change on each interval.

$[-1, 0] =$      $[0, 1] =$

$[-4, -3] =$      $[-3, -2] =$

$[1, 2] =$      $[2, 3] =$

$[-2, -1] =$      $[1, 2] =$

$[-5, -4] =$      $[-2, -1] =$

$[0, 1] =$      $[3, 4] =$

$[-3, -2] =$      $[2, 3] =$

$[-6, -5] =$      $[-1, 0] =$

$[-1, 0] =$      $[4, 5] =$

c) What are similarities of the average rates of change for each quadratic?

**SMP #8**

d) What are differences between the average rates of change for each quadratic?

e) Which graphs open up? How do you know? Which graphs will open down? How will you know?

### EXIT TICKET –

Complete the graph by plotting three additional points.  
Mark the points clearly on the graph.

Explain in complete sentences how you found those points.

