

AGENDA

Objective: Identify the shape and graph of a quadratic function.
Define and identify quadratic functions.

- 1) Intro to Parabolas:
 - 3 Short Videos
 - Notes
- 2) Comparing Linear and Quadratic Equations
- 3) Identifying Parts of a Parabola
- 4) Graphing Quadratics Using Tables
(use calculator)

Homework: Graphing and Identifying Parts of a Parabola

Objective: Identify the shape and graph of a quadratic function.
 Define and identify quadratic functions.

act1-1.mov

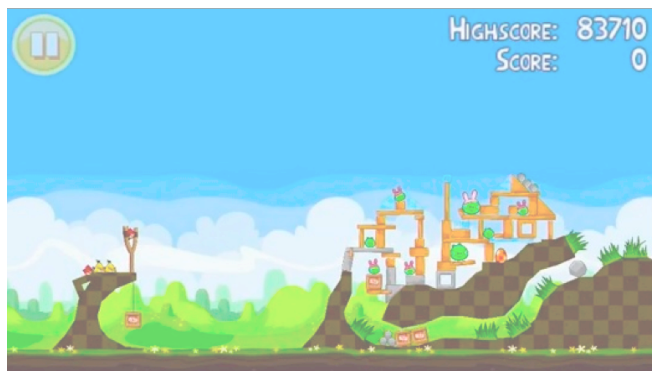
act3-1.mov

angry birds video 1

Sketch a picture of the path the basketball takes.



Sketch a picture of the path the Angry Bird takes.



This shape is called a **Parabola**.
 Parabolas can visually represent
projectiles (basketballs, Angry Birds, rockets),
falling objects,
profit ,
 etc...

The graph can be represented algebraically by a
Quadratic Equation.

$$y = ax^2 + bx + c$$

Lets compare what we know about **lines**
 to what we will cover on **parabolas**.

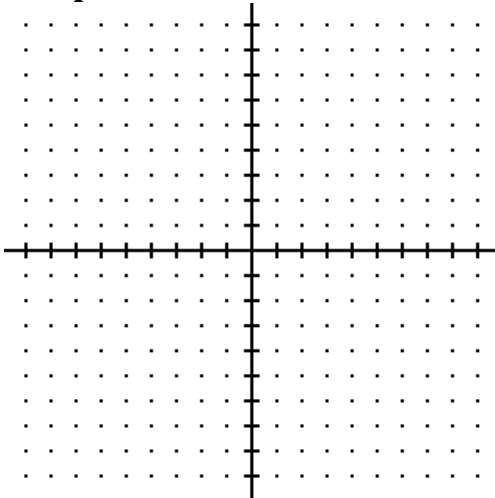
Intro to Quadratic Functions

Describe a Linear Function:

Equation:

Largest Exponent:

Shape:

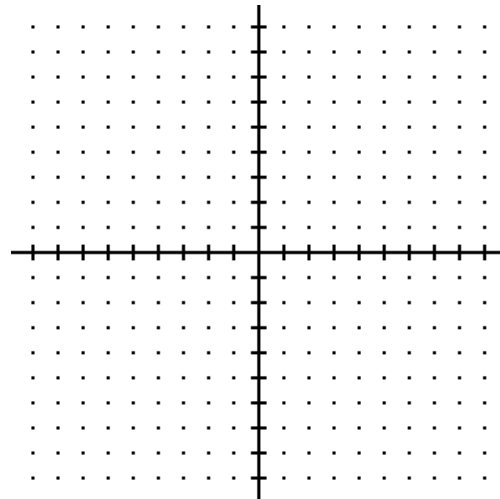


Describe a Quadratic Function:

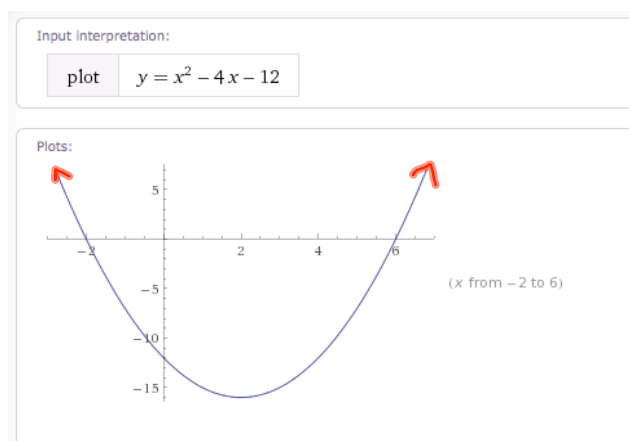
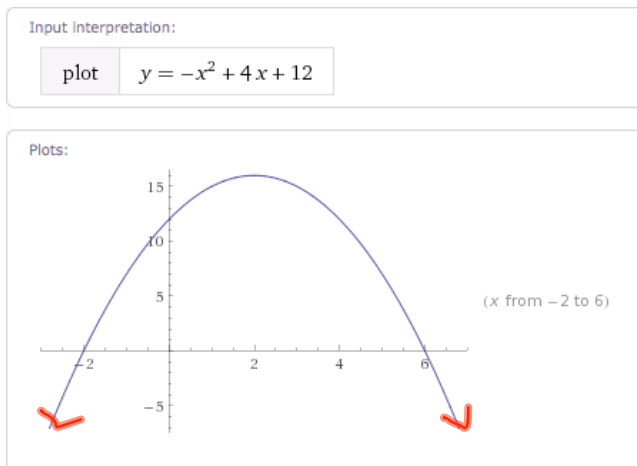
Equation:

Largest Exponent:

Shape:



$$y = ax^2 + bx + c$$



Opens up:

Opens Down:

Vertex:

Axis of Symmetry (AOS):

y - intercept:

x - intercept:

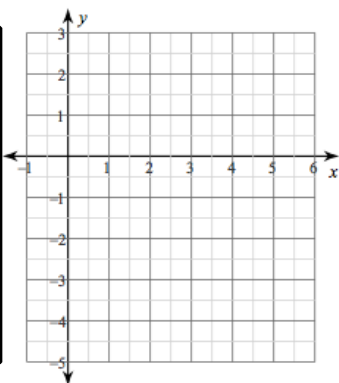
Intro to Quadratic Functions

Graph the equations below

Use the given x-values to solve for each y-value.
Then plot the points on the graphs.

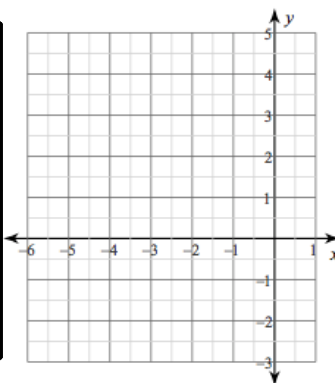
5) $y = x^2 - 8x + 13$

x	y
2	
3	
4	
5	
6	



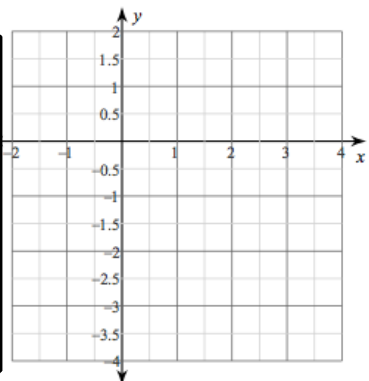
6) $y = -x^2 - 8x - 13$

x	y
-6	
-5	
-4	
-3	
-2	



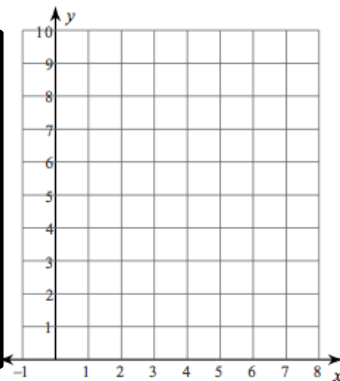
2) $y = -\frac{1}{2}x^2$

x	y
-2	
-1	
0	
1	
2	



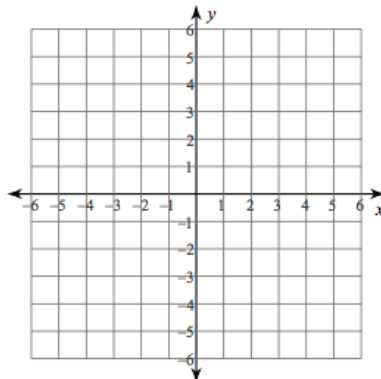
4) $y = 2x^2 - 16x + 33$

x	y
2	
3	
4	
5	
6	



11) $y = \frac{1}{2}x - 2$

x	y
-2	
-1	
0	
1	
2	



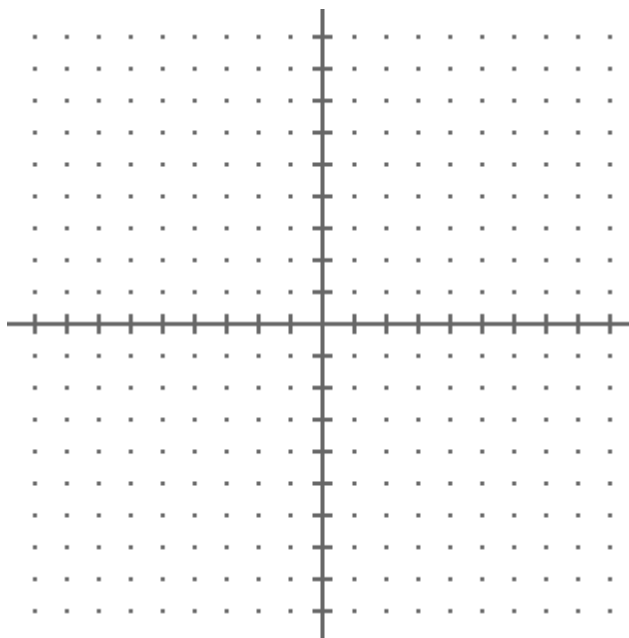
Homework: Graphing and Identifying Parts of a Parabola

Homework: Graphing and Identifying Parts of a Parabola

1) Graph $f(x) = x^2 - 4x - 5$

a. Use the given values for x find y . Plot the points on the graph.

x	$x^2 - 4x - 5$	y
-1	$(\underline{\quad})^2 - 4(\underline{\quad}) - 5$	
0	$(\underline{\quad})^2 - 4(\underline{\quad}) - 5$	
2	$(\underline{\quad})^2 - 4(\underline{\quad}) - 5$	
4	$(\underline{\quad})^2 - 4(\underline{\quad}) - 5$	
5	$(\underline{\quad})^2 - 4(\underline{\quad}) - 5$	



b. Axis of Symmetry: $x = \underline{\hspace{2cm}}$

c. Vertex: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

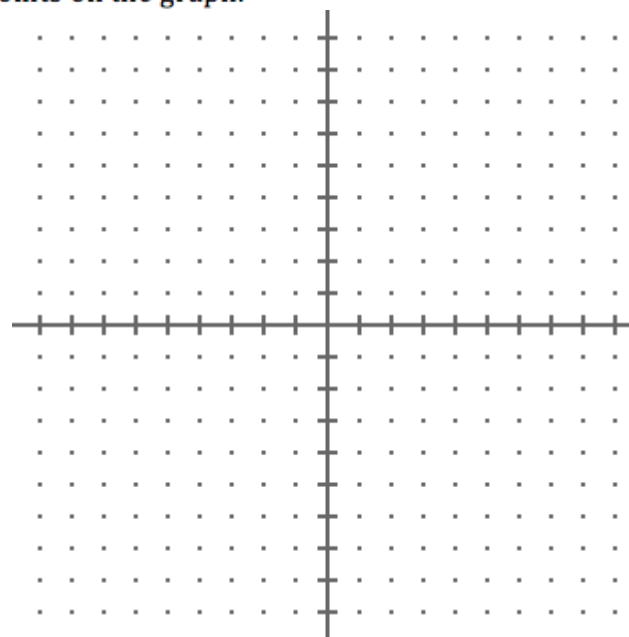
d. Y - intercept: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

e. Roots: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

2) Graph $f(x) = -x^2 + 2x + 3$

a. Use the given values for x find y . Plot the points on the graph.

x	$-x^2 - 2x + 3$	y
-1	$-(\underline{\quad})^2 - 2(\underline{\quad}) + 3$	
0	$-(\underline{\quad})^2 - 2(\underline{\quad}) + 3$	
1	$-(\underline{\quad})^2 - 2(\underline{\quad}) + 3$	
2	$-(\underline{\quad})^2 - 2(\underline{\quad}) + 3$	
3	$-(\underline{\quad})^2 - 2(\underline{\quad}) + 3$	



b. Axis of Symmetry: $x = \underline{\hspace{2cm}}$

c. Vertex: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

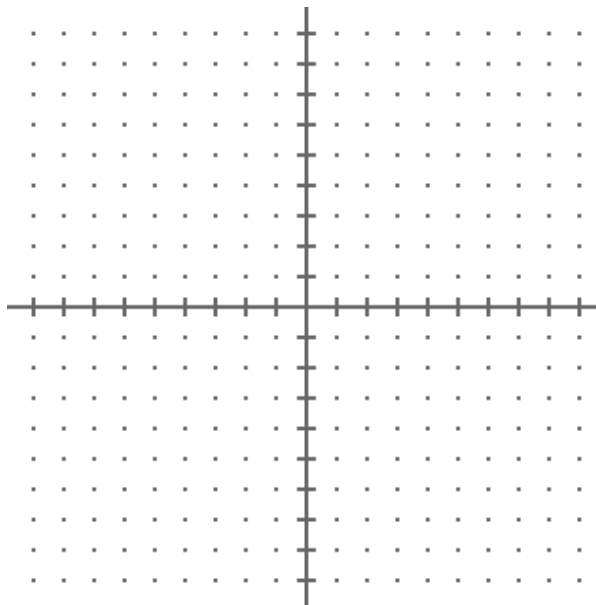
d. Y - intercept: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

e. Roots: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

3) Graph $f(x) = x^2 - 6x$

a. Use the given values for x find y . Plot the points on the graph.

x	$x^2 - 6x$	y
0	$(\quad)^2 - 6(\quad)$	
2	$(\quad)^2 - 6(\quad)$	
3	$(\quad)^2 - 6(\quad)$	
5	$(\quad)^2 - 6(\quad)$	
6	$(\quad)^2 - 6(\quad)$	



b. Axis of Symmetry: $x = \underline{\hspace{2cm}}$

c. Vertex: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

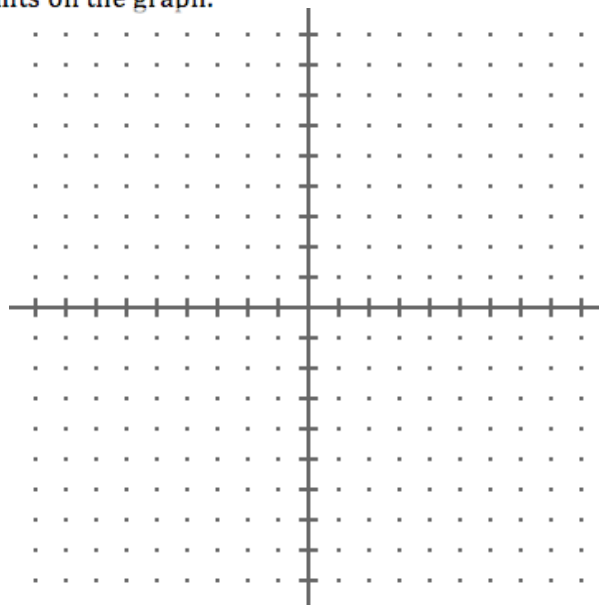
d. Y - intercept: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

e. Roots: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

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

a. Use the given values for x find y . Plot the points on the graph.

x	$-x^2 + 6x - 8$	y
1	$(\quad)^2 - 6(\quad)$	
2	$(\quad)^2 - 6(\quad)$	
3	$(\quad)^2 - 6(\quad)$	
4	$(\quad)^2 - 6(\quad)$	
5	$(\quad)^2 - 6(\quad)$	



b. Axis of Symmetry: $x = \underline{\hspace{2cm}}$

c. Vertex: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

d. Y - intercept: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

e. Roots: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$