Thursday, November 19, 2015
10:58 AM

11.2 Parabolas – An Algebraic Look

- A quadratic function is a function that can be represented by the equation $\underbrace{y=ax^2+bx+c}_{\text{Standard Form}}$.
- The graph of quadratic functions are parabola.
- Use the equation $y = ax(x-d)$ when: you are given the x-intercepts and one of the x-intercepts is the origin (0,0)

when looking for x-int

$y = x(x-2)$

$0 = x(x-2)$

$x=0$ $\quad$ $x=2$

Let's Practice:

1) Find an equation of the graph of a quadratic function that:

A) Crosses the x-axis at $\boxed{(0, 0)}$ and (5, 0) and passes through the point (-3, 10)

d

x y

$y=ax(x-d)$

$10=a(-3)(-3-5)$

$10=a(-3)(-8)$

$10=24a \therefore a=5/12$

$\boxed{y=\frac{5}{12}x(x-5)}$

B) Crosses the x-axis at $\boxed{(0, 0)}$ and (-3, 0) and passes through the point (6, -8)

d

x y

$y=ax(x-d)$

$-8=a(6)(6+3)$

$-8=54a$

$\frac{-4}{27}=a$

$\boxed{y=\frac{-4}{27}x(x+3)}$

C) Crosses the x-axis at (0, 0) and (-1, 0) and passes through the point (-3, 8).

2) Which of the following points lie on the parabola y = -3x(x – 4)?

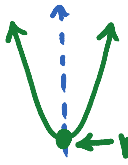
A) (0, -4)
B) (0, 0)
C) (-1, 9)
D) (0, 4)

11.3 Graphing Quadratic Functions

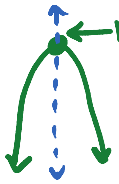
What do you remember about the Standard Form of a quadratic function? $y=ax^2+bx+c$

a: facing up/down & width (wide or narrow)

- $a>0$



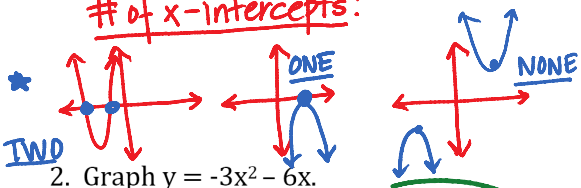
- $a<0$



c: y-intercept $(0,c)$

Axis of Symmetry: $x=\frac{-b}{2a}$ ← * x-value of vertex *

# of x-intercepts:



Let's Practice:

1. Graph $y = 2x^2 - 8x + 7$.

y-int: $(0,7)$

Face Up

A.O.S. $x=\frac{-b}{2a}$

$x=\frac{8}{2(2)}$

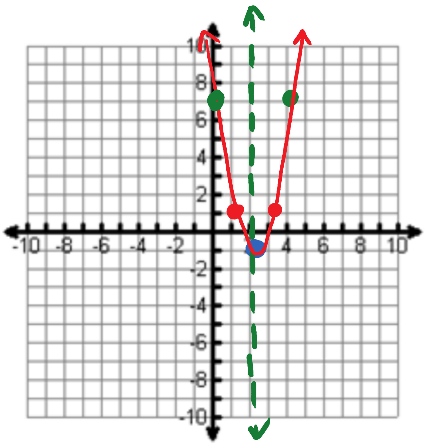
$x=2$

Vertex $(2,-1)$

$y=2(2)^2-8(2)+7$

x	y
0	7
1	1
2	-1
3	1
4	7

← Vertex



2. Graph $y = -3x^2 - 6x$.

y-int: $(0,0)$

Face Down

A.O.S. $x=\frac{-b}{2a}$

$x=\frac{6}{2(-3)}$

$x=-1$

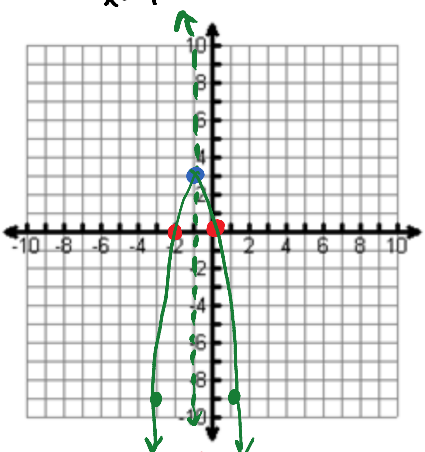
Vertex: $(-1,3)$

$y=-3(-1)^2-6(-1)$

x	y
-3	-9
-2	0
-1	3
0	0
1	-9

$y=-3x(x+2)$

0 -2



3. Graph $y = -2x^2 - 4$.

y-int: $(0,-4)$

A.O.S $x=\frac{-b}{2a}$

$x=0$

vertex $(0,-4)$

x	y
-2	-12
-1	-6
0	-4
1	-6
2	-12