Today's Plan:

Learning Target (standard): I will describe quadratic equations as functions. I will find the vertex of a quadratic function.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

X	Y
-2	4
3	5
2	4

Function? Why?

Function – every x-value has only one y-value

X	Y
2	3
2	-2
4	3

Function? Why?

No – the x-value of 2 has 2 different y-values

X	Y
1	2
2	-1
5	4

Function? Why?

Function – every x-value has only one y-value

X	Y
0	3
1	-2
2	3

Function? Why?

Function – every x-value has only one y-value

X	Y
1	3
3	-1
2	4

Fill in the blanks to make a function.

X	Y
0	3
1	-2
0	3

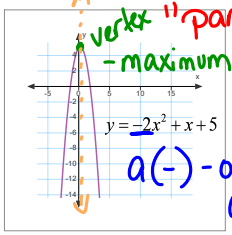
Fill in the blanks to make a function.

X	Y
-5	4
-1	0
2	4
3	-2

Quadratic Equation in Two Variables:

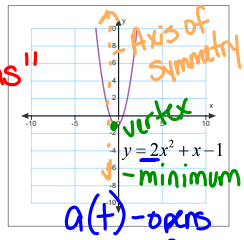
$f(x) = ax^2 + bx + c$

"parabolas"



vertex – maximum

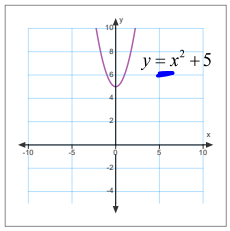
a(-) – opens down

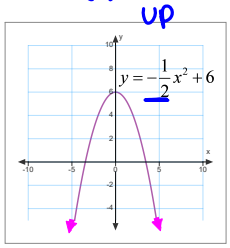


Axis of Symmetry

vertex – minimum

a(+) – opens up





Quadratic Equations:

1) standard form

$$f(x) = ax^2 + bx + c$$

a(+) - opens up → minimum

a(-) - opens down → maximum

2) vertex form

$$f(x) = a(x-h)^2 + k$$

Feb 16-2:08 PM

Quadratic Equations:

$$f(x) = a(x-h)^2 + k$$

- opposite

- same

vertex: (h, k)

$$f(x) = -3(x-4)^2 + 5$$

x-4=0
x=4

① opens down → maximum

② vertex: (4,5)

Jan 30-7:43 AM

Tell which direction the parabola opens. Find the vertex.

$$f(x) = 4(x+3)^2 - 2$$

x+3=0
x=-3

1) opens: up → minimum

2) vertex: (-3,-2)

Jan 29-8:00 AM

Tell which direction the parabola opens. Find the vertex.

$$f(x) = -2(x-4)^2 + 5$$

1) opens: down → maximum

2) vertex: (4,5)

Jan 29-8:00 AM

Quadratic Equations:

$$f(x) = ax^2 + bx + c$$

$$x = -\frac{b}{2a}$$ * plug in x to get y

vertex: (x, y)

$$f(x) = x^2 + 4x - 3$$

① opens up → minimum

② vertex: (-2,-7)

$$x = -\frac{b}{2a} = \frac{-4}{2(1)} = \frac{-4}{2} = -2$$

$$f(-2) = (-2)^2 + 4(-2) - 3$$
$$= 4 - 8 - 3$$

x=-2

f(-2)=-7

y-value

Jan 30-7:43 AM

Tell which direction the parabola opens. Find the vertex.

$$f(x) = x^2 + 2x - 1$$

1) opens: up → minimum

2) vertex: (-1,-2)

$$x = -\frac{b}{2a} = \frac{-2}{2(1)} = \frac{-2}{2} = -1$$

$$f(-1) = (-1)^2 + 2(-1) - 1$$
$$= 1 - 2 - 1$$

$$f(-1) = -2$$

Apr 4-3:18 PM

Tell which direction the parabola opens. Find the vertex.

$$f(x) = 2x^2 + 24x + 70$$

1) opens: up → minimum

2) vertex: $(-6, -2)$

$$x = -\frac{b}{2a} = \frac{-24}{2(2)} = \frac{-24}{4} = -6$$

$$f(-6) = 2(-6)^2 + 24(-6) + 70$$
$$= 2(36) - 144 + 70$$
$$= 72 - 144 + 70$$
$$f(-6) = -2$$

Apr 4-3:18 PM

Assignment:

Vertex of a Quadratic

#1-12

* tell the direction & find the vertex *