

Algebra II Chapter 7 Review

What are the three methods for solving quadratic equations?

- 1) Factor Method (Backwards FOIL)
- 2) Radical Method (Complete the square)
- 3) Quadratic Formula

What is the domain of any quadratic function?

What is the general form of a quadratic function?

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

What is it good for?

- 1) x-intercepts (solving)
- 2) y-intercepts (0, c)

What are y-intercepts? where the graph crosses the y-axis

How do I find them?

- 1) Put zero in for x
- 2) Look at graph

What are x-intercepts? Where it crosses the x-axis

How do I find them?

- 1) Put zero in for y
- 2) Look at graph

What are some other names for x-intercepts (synonyms)?

- 1) Zeros
- 2) Solutions
- 3) roots

What is the standard form of a quadratic equation? $y = a(x-h)^2 + k$

What is it useful for? Graphing, vertex
↳ maxs and mins

What does a tell us about the graph?

- 1) $a < 0$, upside down
- 2) $a < 1$, fat
- 3) $a > 1$, skinny

What does h do to the graph? Slides left or right
(opposite of sign)

What does k do to the graph? Slides up or down

How do I change from the general form to the standard form of a quadratic function? **Complete the square**

How do I find a quadratic equation from its solutions?
set answers = x, un-solve.

What is the quadratic formula? $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

What is it useful for? **Solve ANY quadratic**
 biggest power is 2

The vertex of a quadratic is (h, k) . How does the vertex relate to:

1) the axis of symmetry: **$x = h$**

2) the value of the maximum or the minimum? **k**

3) the range of the function? **$[k, \infty)$ ← if opens up, min**
 $(-\infty, k]$ ← if opens down, max

4) the x-intercepts? **h is halfway between them**
 zeros,
 roots,
 solutions

5) the input that causes the max or min? **h**

7-7
30)

vertex $(-1, -10)$

x-ints $\{-6, 4\}$

$\rightarrow (-6, 0)$
 $(4, 0)$

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

$$= a(x+1)^2 - 10$$

pick $(-6, 0)$ or $(4, 0)$

$$0 = a(4+1)^2 - 10$$

$$10 = a(5)^2$$

$$10 = 25a$$

$$\frac{10}{25} = a$$

$$\frac{2}{5} = a$$

$$F(x) = \frac{2}{5}(x+1)^2 - 10$$

36) Range $y \leq 9$ $(-\infty, 9]$

x-ints $\{-2, 4\}$

$\leftarrow k=9$

$(-2, 0)$ $(4, 0)$

\leftarrow h is halfway, $h=1$

vertex $(1, 9)$

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

$$F(x) = a(x-1)^2 + 9$$

pick $(-2, 0)$ or $(4, 0)$

$$0 = a(4-1)^2 + 9$$

$$-9 = a(3)^2$$

$$-1 = a$$

$$F(x) = -(x-1)^2 + 9$$