Algebra II
Chapter 7 Review

What are the three methods for solving quadratic equations?

1) Factoring (Backwards FOIL, Difference of Squares etc)

2) Radical method $\sqrt{(x-7)^2} = \sqrt{5}$

3) Quadratic Formula

What is the domain of any quadratic function? $\mathbb{R}$

What is the general form of a quadratic function? $F(x) = ax^2 + bx + \underline{c}$

What is it good for? → x-intercepts

1) Solving (w Quadratic Formula)

2) y-intercepts $(0, \underline{c})$

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

How do I find them?

1) Let x = 0

2) Look at graph.

What are x-intercepts? Where a graph crosses the x-axis.

How do I find them?

1) y = 0

2) Look at graph.

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

1) Solve

2) Zeros

3) Roots

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

What is it useful for? Graphing → vertex = (h, k)

What does *a* tell us about the graph?

1) Fat $\quad 0 < |a| < 1$

2) Skinny $\quad |a| > 1$

3) upside down (negative)

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

What does *k* do to the graph?
slides up or down (normal)

What is a derivative? $F'(x)$, output is a slope (x, m)

How do I find the derivative of:
1) a constant function? always zero $\quad F(x) = 12 \quad F'(x) = 0$

2) a polynomial? a: multiply the power by the coefficient.
b: Subtract 1 from the power.

What is the derivative used for?
Set equal to zero to find h of the vertex

How do I find a quadratic equation from its solutions?

$\{3, 2\}$ Set equal to x
x = 3, x = 2
work backwards
Unsolve.

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

What is it useful for?
Solves any quadratic
Always works.

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?
   either $\begin{array}{l} (-\infty, k] \quad \text{max} \\ [k, \infty) \quad \text{min} \end{array}$

4) the x-intercepts? h is exactly halfway between the x-intercepts.

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