Index Card #4 (Back & Front)

Quadratics - Continued

Sum & Product of Roots: used to Write Quad Eq

Sum of Rts = $\dfrac{-b}{a}$ Product of Rts: $\dfrac{c}{a}$

If Given the Roots... Add them and find a & b

... Multiply them and find a & c

If you are missing part of the equation ... Use what you know to find the other root. Then use the two roots to find the missing info.

Solving Systems of Equations:

1. Get One of the Variables ALONE
2. Substitute what the variable = in for that variable in the other equation
3. Solve the Equation — Quadratic: Get Everything on one side = 0   Keep x^2 positive
4. Take each of the values of the variables and substitute into the easier equation to find the other variable.
5. Write the Answers in Pairs

Remember: Use the Quadratic Formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

When you cannot factor!

Quadratic Inequalities:

1. Get Everything on one side = 0   Keep x^2 positive
2. Factor
3. Set each factor = 0 to find the critical values
4. Make a number line — put the critical values on the number line

5. **Test a number in each interval of the critical values (Smaller, Between, Larger) Plug into the factored Inequality**
6. **Shade where the Yes was (Where the number worked)**
7. **Write the solution set: remember**

in the middle - $critical\ val < x < critical\ val$

on the outsides - $x < critical\ val\ \ OR\ \ x > critical\ val$

Interval Notation:

$<, >$ ( )   **Smallest, Largest**

$\leq, \geq$ [ ]   **Goes On Forever -   ∞**

If there are two then write each with a ∪

Quadratic Inequality Graphically:

1. **Get the Y alone**
2. **Find axis of Sym $x = \dfrac{-b}{2a}$**
3. **Plug into inequality for X to find Y (vertex Pt) This point should be in the middle of your table**
4. **Input equation into Calculator – Get table of values**
5. **Plot points $<, >$ $dotted$ $\leq, \geq$ $solid$**
6. **Pick a test point   If works shade where the test point is   If not shade on the other side (inside or Outside Parabola)**

Polynomial Equations: If a Trinomial: You can use ABC Method if the Largest exponent is EVEN and the middle term is half of the Largest Exponent Don't Forget the GCF!!!

REMEMBER:

1. THE ROOTS FROM A GRAPH ARE WHERE THE GRAPH CROSSES THE X-AXIS.

   CALC: 2ND TRACE (CALC MENU) 2. ZEROS SURROUND THE X-AXIS

2. IF YOU HAVE A RADICAL IN THE DENOMINATOR OF A FRACTION - RATIONALIZE IT! MULTIPLY BY THE $\sqrt{}$ ON THE NUMERATOR & DENOMINATOR