PreCalculus Name: Period: Date:

Warm Up 9/18

Lesson 2-5b: Quadratic Function: Maxima and Minima

Objective
Students will…
- Be able to find x and y-intercepts, via factoring, quadratic formula, and completing the square.
- Be able to graph quadratic functions by plotting vertex and the intercepts.

Standard form of a Quadratic Function
Recall that the standard form of a quadratic function is: $f(x) =$,where *a, b,* and *c* are real numbers and $a \neq 0$
Also, remember that the parabola opens _____ ("smiley") if $a > 0$, while it opens _____ ("frowny") if $a < 0$.

Y-intercept
Remember that y-intercept is where the function crosses the ____-axis, i.e. when $x = 0$. So, to find the y-intercept simply plug in __ for x and solve. It's good to keep in mind that a parabola will always have exactly one y-intercept.
Ex. $f(x) = x^2 - 6x + 8$

X-intercept
In contrast, the x-intercepts are where the function crosses the ____-axis, i.e. when $y = 0$. So, one must make y, or f(x) in this case, zero and then solve for *x*. This can be done either by factoring, using the quadratic formula, or completing the square.
Ex. $f(x) = x^2 - 6x + 8$ $f(x) = 2x^2 - 12x + 11$

Graphing the quadratics
So, once you have the vertex and the x and y-intercepts, you can graph the parabola.
Ex. $f(x) = x^2 - 6x + 8$

Try a few more…

Graph the following functions
1. $f(x) = 2x^2 + 8x + 11$
2. $f(x) = -x^2 + x + 2$

3. $f(x) = 3x^2 + 6x - 1$

Homework 9/18
TB pg. 200-201 #1-17 (E.O.O)
Do all of the parts (a, b, and c).
Remember, you should already have the vertex from previous night.