

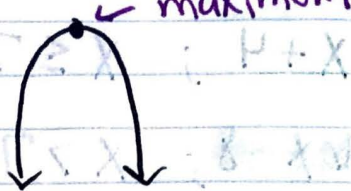
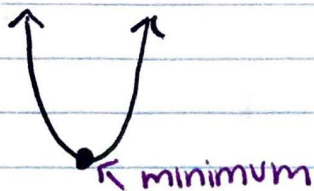
(quadratic)

1.7 Vertex of Parabola

9/9/19

Standard Form

recall: $ax^2 + bx + c$



a value is positive

a value is negative

Ex 1: Find the vertex of: $y = x^2 + 4x + 8$

Step 1: Identify a , b , & c : $a = 1$, $b = 4$, $c = 8$

Step 2: Find x using $x = \frac{-b}{2a}$: $x = \frac{-4}{2(1)} = -2$

Step 3: Find y by substituting the x value into the original problem. $y = 1(-2)^2 + 4(-2) + 8$
 $y = 8$

Step 4: Write as a point: $(-2, 8)$ minimum

Ex 2: Find the vertex of: $y = -3x^2 - 18x + 4$

$a = -3$, $b = -18$, $c = 4$

$x = \frac{-(-18)}{2(-3)} = -3$

$y = -3(-3)^2 - 18(-3) + 4 = 31$

$(-3, 31)$ maximum