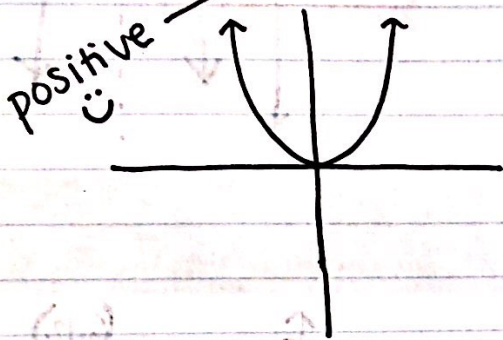


Intro to Quadratics - vertex, Max/Min, Axis of Symmetry

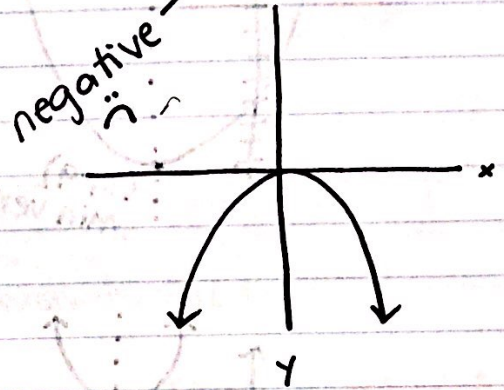
Quadratic in standard form: $y = ax^2 + bx + c$

* graphs of quadratics are parabolas.

ex. $y = x^2 + 2x - 5$



ex. $y = -x^2 + 3x + 7$



Quadratics are symmetric!

Axis of Symmetry: line that cuts right down middle of parabola (goes through vertex).

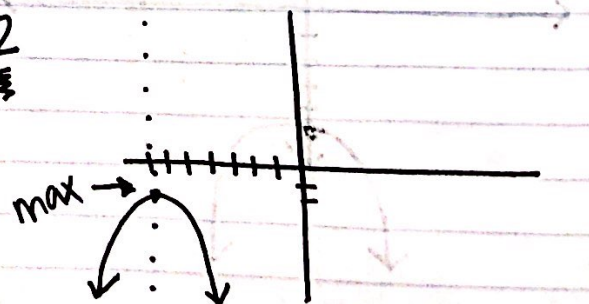
$$x = \frac{-b}{2a}$$

vertex: either the highest point (max) if parabola is $-$ or lowest point (min) if parabola is $+$.

Quadratic in vertex form: $y = a(x-h)^2 + k$
 (h, k) is the vertex

ex. $y = -3(x+7)^2 - 2$

vertex: $(-7, -2)$
 AOS: $x = -7$



$$y = 2x^2 - 12x + 9$$

$$y = -x^2 + 10x - 23$$

$$y = 3(x - 4)^2 + 6$$

$$y = -(x - 6)^2 + 12$$

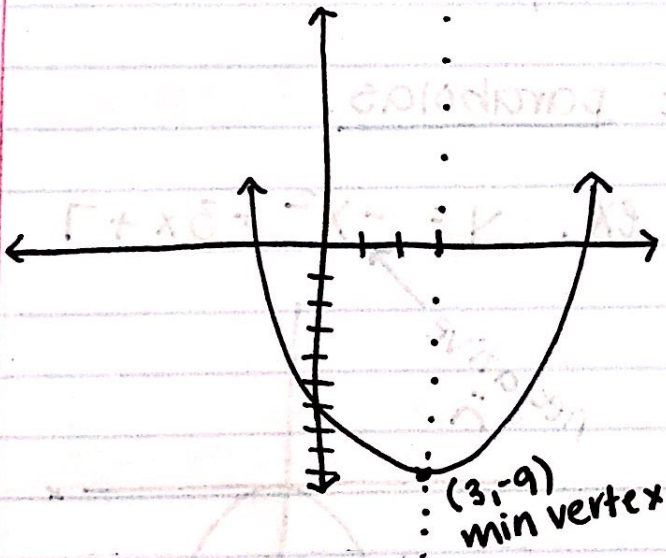
$$x^2 = -y - 5$$

$$-7x^2 - 127 + 8y = 70x$$

Min/Max

AOS: $x = \frac{-(-12)}{2(2)} = \frac{+12}{4} = 3$ $x=3$

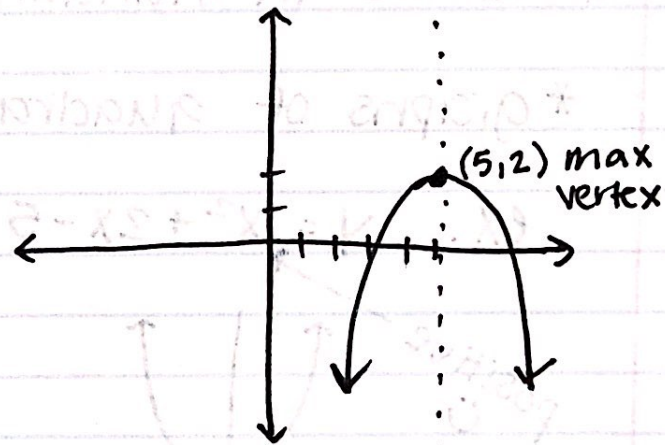
Vertex: $y = 2(3)^2 - 12(3) + 9$
 $y = -9$
 $(3, -9)$



Min/Max

AOS: $x = \frac{-(-10)}{2(-1)} = \frac{-10}{-2} = 5$ $x=5$

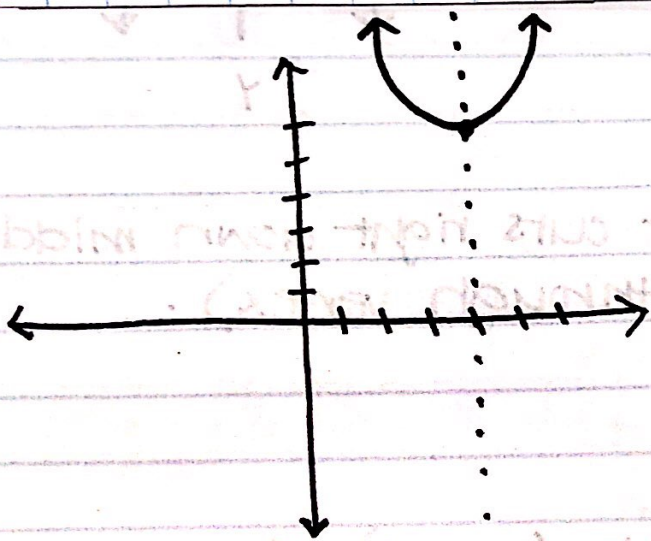
Vertex: $y = -(5)^2 + 10(5) - 23$
 $y = -25 + 50 - 23$
 $y = 25 - 23 = 2$
 $(5, 2)$



Min/Max

AOS: $x = 4$

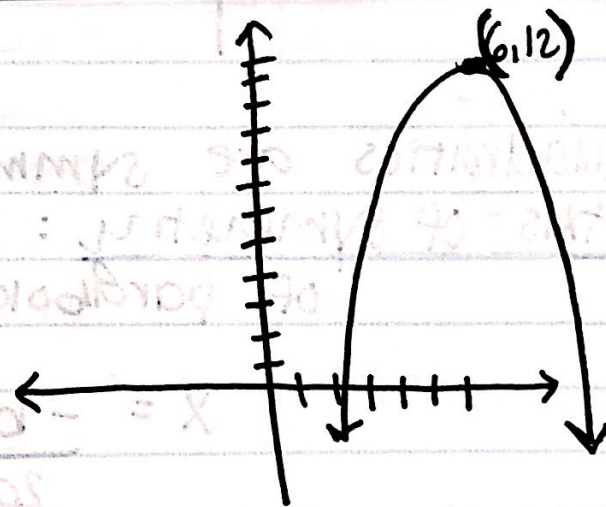
Vertex: $(4, 6)$



Min/Max

AOS: $x = 6$

Vertex: $(6, 12)$



$$+y \quad x^2 = -y - 5 \quad -x^2$$

$$y = -x^2 - 5$$

Min/Max

AOS: $x = \frac{-(0)}{2(-1)} = 0$ $x=0$

Vertex: $y = -(0)^2 - 5 = -5$

$(0, -5)$

