Lesson 6-12 → Vertex Form

Standard form $ax^2 + bx + c$

c ↑ y-intercept

factored form $a(x - \text{Root 1})(x - \text{Root 2})$

Vertex Form $a(x - h)^2 + k$

vertex: (h, k)

Going from Standard form to Vertex form with Graphing

$-3x^2 + 18x - 15$

$-3(x^2 - 6x + 5)$

$-3(x-1)(x-5)$

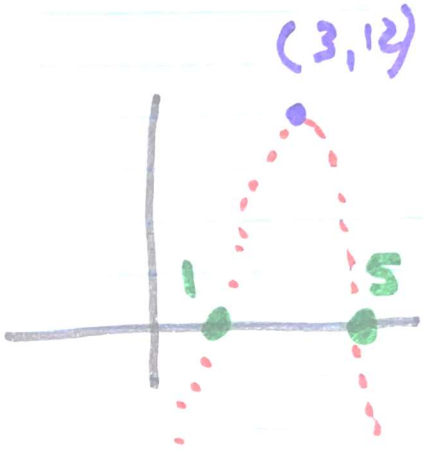
line of symmetry $x = 3$

vertex $(3, \_\_)$

$-3(3-1)(3-5)$

$-3(2)(-2) = 12$

vertex $(3, 12)$



vertex form $a(x-h)^2 + k$

$-3(x-3)^2 + 12$

Going from Vertex form to factored form

$-3(x-3)^2+12$

vertex $(3, 12)$

$-3(x-3)(x-3)+12$

F.O.I.L.

$-3(x^2-3x-3x+9)+12$

$-3(x^2-6x+9)+12$

$-3x^2+18x-27+12$

$-3x^2+18x-15$

$-3(x^2-6x+5)$

$-3(x-1)(x+5)$