

Lesson 7-2 → Completing the Square
when $a > 1$

$$2x^2 + 12x - 22$$

Step 1 → factor out "a"

Step 2 → use $\frac{1}{2}$ of "b" to find "h"

$$2(x^2 + 6x - 11) = 2(x+3)^2 + K$$

Step 3 → Adjust for "K"

$$2x^2 + 12x - 22 = 2(x+3)(x+3) + K$$

$$2x^2 + 12x - 22 = 2(x^2 + 6x + 9) + K$$

$$2x^2 + 12x - 22 = 2x^2 + 12x + 18 + K$$

$$-22 = 18 + K$$

Awesome! K is -40

$$2x^2 + 12x - 22 = 2(x+3)^2 - 40$$

y-intercept $(0, -22)$ vertex $(-3, -40)$