

Lesson 7-3 → Completing the Square
when $a < 0$

$$-2x^2 - 12x - 14$$

Step 1 → factor out "a"

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

$$-2(x^2 + 6x + 7) = -2(x+3)^2 + K$$

Step 3 → Adjust for "K"

$$-2x^2 - 12x - 14 = -2(x+3)(x+3) + K$$

$$-2x^2 - 12x - 14 = -2(x^2 + 6x + 9) + K$$

$$-2x^2 - 12x - 14 = -2x^2 - 12x - 18 + K$$

$$-14 = -18 + K$$

Awesome! K is 4

$$-2x^2 - 12x - 14 = -2(x+3)^2 + 4$$

y-intercept (0, -14)

vertex (-3, 4)