

Which is better?

Alex and Morgan were asked to find the x-intercepts of the graph given by the equation $y = x^2 - 2x - 3$

Alex's "use the quadratic formula" way

Since the x-intercepts occur when y is equal to zero, I substituted 0 for y in the equation.

Then I wrote down the quadratic formula..

I plugged in the values for a, b, and c from the original equation, and solved for x.

$$y = x^2 - 2x - 3$$

$$0 = x^2 - 2x - 3$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-3)}}{2(1)}$$

$$x = \frac{2 \pm \sqrt{4 + 12}}{2}$$

$$x = \frac{2 \pm \sqrt{16}}{2}$$

$$x = \frac{2 \pm 4}{2}$$

$$x = \frac{6}{2} \text{ and } \frac{-2}{2}$$

$$x = 3 \text{ and } x = -1$$

Morgan's "factor" way

Since the x-intercepts occur when y is equal to zero, I substituted 0 for y in the equation.

Then I factored it.

I set each factor each to zero and solved. And here are my solutions.

$$0 = x^2 - 2x - 3$$

$$0 = (x - 3)(x + 1)$$

$$x - 3 = 0$$

$$x = 3$$

$$x + 1 = 0$$

$$x = -1$$

$$x = 3 \text{ and } x = -1$$



- * How did Alex find the x-intercepts?
- * How did Morgan find the x-intercepts?
- * What are some similarities between Alex's and Morgan's ways?
- * On a timed test, would you rather do Alex's way or Morgan's way?
- * Can you state a general rule that suggests when it might be good to use Alex's way and when it might be good to use Morgan's way?