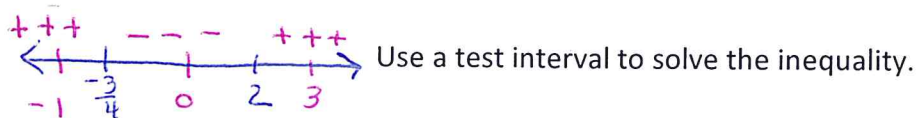## Example 1

$$4x^2 - 5x > 6$$

$$4x^2 - 5x - 6 > 0 \qquad \text{Set to compare to 0.}$$

$$(4x + 3)(x - 2) > 0 \qquad \text{Factor to find roots.}$$
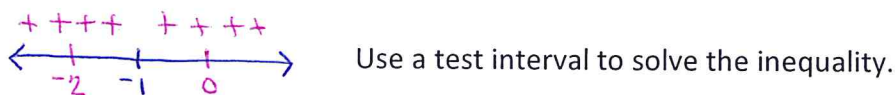
$$x = \frac{-3}{4}, 2$$

Use a test interval to solve the inequality.

$$x \in \left(-\infty, \frac{-3}{4}\right) \cup (2, \infty)$$

Example 2

$$x^2 + 2x + 1 \le 0$$

$$(x + 1)(x + 1) \le 0 \qquad \text{Factor to find roots.}$$

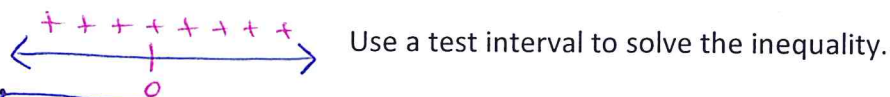$$x = -1$$

Use a test interval to solve the inequality.

$$x = -1$$

Note: The quadratic is always greater than 0, except where it equals 0.

Example 3

$$x^2 + 3x + 5 < 0$$

Normally, you would factor to find the roots. However, this quadratic doesn't factor. From the Quadratic Formula or by looking at the graph, there are no roots.

Use a test interval to solve the inequality.
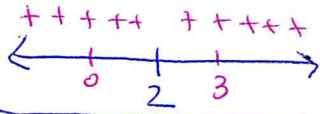
No solution.

Note: There are no sign changes. Based on the test interval the quadratic is always greater than 0.

Example 4

$$x^2 - 4x + 4 > 0$$

$$(x - 2)(x - 2) > 0 \qquad \text{Factor to find roots.}$$

$$x = 2$$

Use a test interval to solve the inequality.

$$x \in (-\infty, 2) \cup (2, \infty)$$

Note: At $x = 2$, the quadratic is equal to 0, not greater than 0.