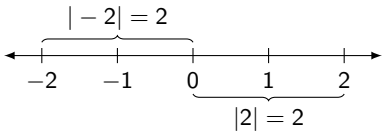
Absolute Value Equations

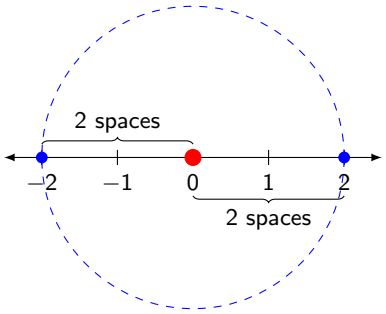
Summary

1. You will *usually* have 2 solutions to absolute value equations.

The **absolute value** of a number, b, denoted $|b|$, is the distance b is from 0 on a number line.

For $|x| = 2$, we get two possible values for x: 2 and -2





When solving absolute value equations:

- [$|x| = c$ means that $x = c$ or $x = -c$.
- Isolate your absolute value bars on one side (if possible) before separating into 2 equations.
- Check your answers in the *original problem*.

Example 1. Solve each.

(a) $|2x - 3| = 11$ (b) $|3x - 1| = 5$ (c) $|x + 5| = 2x$

(d) $|4x - 3| = 5x + 1$

(e) $|x + 1| = -2$

(f) $| - x + 2| - 4 = 10$

(g) $|3x - 1| = |x + 5|$