



KEY IDEA

Solving Equations with Two Absolute Values

To solve $|ax + b| = |cx + d|$, solve the related linear equations

$$ax + b = cx + d \quad \text{or} \quad ax + b = -(cx + d).$$

$$|3x - 4| = |x|$$

$$|x + 8| = |2x + 1|$$

$$3|x - 4| = |2x + 5|$$

$$|4x - 10| = 2|3x + 1|$$

Identifying Special Solutions

When you solve an absolute value equation, it is possible for a solution to be *extraneous*. An **extraneous solution** is an apparent solution that must be rejected because it does not satisfy the original equation.

$$|2x + 12| = 4x$$

$$|x + 5| = |x + 11|$$