

Absolute Value Equations Video Lecture

Section 9.2

Course Learning Objectives:

Solve certain types of linear equations.

Weekly Learning Objectives:

Solve absolute value equations.

Absolute Value Equations

If a is a positive number then $|x| = a$ is equivalent to $x = a$ or $x = -a$.

Solve:

$$|x| = 3$$

$$|3x + 1| = 6$$

$$|2x| + 1 = 6$$

$$3|x - 2| + 2 = |-8|$$

$$|2x - 3| = 0$$

$$|5x| = 0$$

$$|5x + 1| = -3$$

$$|x - 3| = -6$$

$$|x - 2| = |2x + 1|$$

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

$$\left| \frac{5x + 2}{2} \right| = |-6|$$

$$\left| \frac{5d + 1}{6} \right| = -|-9|$$

Summary for Solving Absolute Value Equations:

If $|\text{expression}| = a$ where a is positive, then

$$\begin{array}{l} \diagup \quad \diagdown \\ \text{exp} = a \quad \text{exp} = -a \end{array}$$

If $|\text{expression}| = a$ where a is negative, then

$$\emptyset$$

If $|\text{expression}| = 0$, then

$$\text{exp} = 0$$

If $|\text{expression 1}| = |\text{expression 2}|$, then

$$\begin{array}{l} \diagup \quad \diagdown \\ \text{exp1} = \text{exp2} \quad \text{exp1} = -(\text{exp2}) \end{array}$$

