Absolute Value Equations

Let's solve absolute value equations.

15.1 Worked Example: Solving Equations

Solve the equation $-(3x - 7) = -5$ for x.

Step 1:

$$-(3x - 7) = -5$$
$$-3x + 7 = -5$$

Step 2:

$$-3x + 7 = -5$$
$$-3x + 7 - 7 = -5 - 7$$
$$-3x = -12$$

Step 3:

$$-3x = -12$$
$$x = 4$$

15.2 Solving Absolute Value Equations

Solve each equation for x. Be prepared to explain your reasoning.

1. $x + |5| = 7$

2. $|-12| - x = 9$

3. $|x| - 3 = 8$

4. $|4x| = 32$

15.3 Finding Value in Equations

1. Solve each equation for x. Be prepared to explain your reasoning.

   a. $2(x - |2|) = 16$

   b. $-(x + |12|) = -11$

   c. $-4(|x| + 8) = -48$

   d. $-3x + |-4| = -14$

   e. $-5|x| + 3 = -7$

2. How does an absolute value in an equation affect the solution?