



# 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:

$$\begin{aligned} -(3x - 7) &= -5 \\ -3x + 7 &= -5 \end{aligned}$$

Step 2:

$$\begin{aligned} -3x + 7 &= -5 \\ -3x + 7 - 7 &= -5 - 7 \\ -3x &= -12 \end{aligned}$$

Step 3:

$$\begin{aligned} -3x &= -12 \\ x &= 4 \end{aligned}$$

## 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?

