

Solving Absolute Value Equations



Overview of problems



Example Set: A

solve the absolute value equation

$$|x| = 6$$

$$|x - 3| = 10$$

$$|x + 2| = 8$$

$$|3x - 4| = 7$$

$$|2x + 3| = 15$$



Example Set: B

solve the absolute value equation

$$|x+2| - 5 = 10$$

$$6 + |x-3| = 8$$

$$2|4x-7| + 1 = 13$$

$$\frac{1}{3} \left| 3x - \frac{1}{2} \right| - 4 = 5$$



Example Set: C

Find an absolute value equation that models the situation

Engineers have tested a new tire for a sports car. They have concluded that the car performs the best when the tire pressure is at 40psi. Also, they believe the performance will be good if the tire pressure is no more than 2psi off from the optimum setting. Write an absolute value equation or inequality that represents the situation.

Solving Absolute Value Equations



Overview of problems- KEY



Example Set: A

solve the absolute value equation

$$|x| = 6 \quad x = 6, \quad x = -6$$

$$|x - 3| = 10 \quad x = 13 \quad x = -7$$

$$|x + 2| = 8 \quad x = 6 \quad x = -10$$

$$|3x - 4| = 7 \quad x = \frac{11}{3} \quad x = -1$$

$$|2x + 3| = 15 \quad x = 6 \quad x = -9$$



Example Set: B

solve the absolute value equation

$$|x+2| - 5 = 10 \quad x = 13 \quad x = -17$$

$$6 + |x-3| = 8 \quad x = 5 \quad x = 1$$

$$2|4x-7| + 1 = 13 \quad x = \frac{13}{4} \quad x = \frac{1}{4}$$

$$\frac{1}{3} \left| 3x - \frac{1}{2} \right| - 4 = 5 \quad x = 9.\overline{16} \quad x = 8.\overline{83}$$



Example Set: C

Find an absolute value equation that models the situation

Engineers have tested a new tire for a sports car. They have concluded that the car performs the best when the tire pressure is at 40psi. Also, they believe the performance will be good if the tire pressure is no more than 2psi off from the optimum setting. Write an absolute value equation or inequality that represents the situation.

$$|40 - x| \leq 2$$