

## Intermediate Algebra Skill

### Solving Absolute Value Equations: Absolute Value Expressions on Both Sides

Solve the following absolute value equations.

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

$$2) |3x+5| = |x-6|$$

$$3) |x-9| = |x+6|$$

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

$$5) |5t+7| = |4t+3|$$

$$6) |3a-1| = |2a+4|$$

$$7) |n-3| = |3-n|$$

$$8) |y-2| = |2-y|$$

$$9) |7-a| = |a+5|$$

$$10) |6-t| = |t+7|$$

$$11) \left| \frac{1}{2}x - 5 \right| = \left| \frac{1}{4}x + 3 \right|$$

$$12) \left| 2 - \frac{2}{3}x \right| = \left| 4 + \frac{7}{8}x \right|$$

$$13) \left| \frac{m-1}{3} \right| = \left| \frac{m-2}{4} \right|$$

$$14) \left| \frac{2m+3}{5} \right| = \left| \frac{1-3m}{6} \right|$$

$$15) \left| \frac{1}{3}p + \frac{3}{4} \right| = \left| \frac{1}{4}p - 1 \right|$$

$$16) \left| -\frac{2}{3}n + \frac{1}{2} \right| = \left| -\frac{1}{2}n - \frac{1}{4} \right|$$

## Answers to Solving Absolute Value Equations: Absolute Value Expressions on Both Sides

1)  $\{1, 11\}$

2)  $\left\{\frac{11}{2}, \frac{1}{4}\right\}$

3)  $\left\{\frac{3}{2}\right\}$

4)  $\left\{\frac{-1}{2}\right\}$

5)  $\left\{-4, \frac{-10}{9}\right\}$

6)  $\left\{\frac{-3}{5}, 5\right\}$

7)  $\mathbb{R}$

8)  $\mathbb{R}$

9)  $\{1\}$

10)  $\left\{\frac{-1}{2}\right\}$

11)  $\left\{\frac{8}{3}, 32\right\}$

12)  $\left\{\frac{-48}{37}, \frac{-144}{5}\right\}$

13)  $\left\{-2, \frac{10}{7}\right\}$

14)  $\left\{\frac{-13}{27}, \frac{23}{3}\right\}$

15)  $\left\{-21, \frac{3}{7}\right\}$

16)  $\left\{\frac{3}{14}, \frac{9}{2}\right\}$