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