

Linear Equations and Inequalities

- Equations
- Solving Equations
- Linear Equations in One Variable
- Linear Inequalities in One Variable

Sections P3:

HW: 1, 12-20 Even, 24, 26, 27, 38, 39, 45

Aug 20-7:12 AM

Solving Linear Equations

Solve the following equation. Support the result with the calculator

$$2(2x - 3) + 3(x + 1) = 5x + 2$$

$$\underline{4x} - \underline{6} + \underline{3x} + \underline{3} = 5x + 2$$

$$7x - 3 = 5x + 2$$

$$\begin{array}{r} -5x \qquad -5x \\ \hline \end{array}$$

$$2x - 3 = 2$$

$$\begin{array}{r} +3 \quad +3 \\ \hline \end{array}$$

$$2x = 5 \qquad x = 5/2 \text{ or } 2.5$$

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Solving Linear Equation Involving Fractions

Solve

$$\cancel{8} \left(\frac{5y - 2}{\cancel{8}} \right) = \cancel{8} \left(2 + \frac{y}{\cancel{4}} \right)$$

$$LCD = 8$$

$$\frac{8y}{4} = 2y$$

$$\begin{array}{r} 5y - 2 = 16 + 2y \\ -2y \quad \quad -2y \\ \hline \end{array}$$

$$\begin{array}{r} 3y - 2 = 16 \\ +2 \quad +2 \\ \hline 3y = 18 \end{array} \quad y = 6$$

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Solving Linear Inequality

Solve

$$3(x - 1) + 2 \leq 5x + 6$$

$$3x - 3 + 2 \leq 5x + 6$$

$$\begin{array}{r} 3x - 1 \leq 5x + 6 \\ -3x \quad -3x \\ \hline \end{array}$$

$$\begin{array}{r} -1 \leq 2x + 6 \\ -6 \quad -6 \\ \hline \end{array}$$

$$-7 \leq 2x$$

$$-\frac{7}{2} \leq x$$

$$\boxed{\left[-\frac{7}{2}, \infty\right)}$$

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Solving Linear Inequality Involving Fractions

Solve

$$LCD = 12$$

$$12 \left(\frac{x}{3} + \frac{1}{2} > \frac{x}{4} + \frac{1}{3} \right)$$

$$\begin{array}{r} 4x + 6 > 3x + 4 \\ -3x \quad -3x \\ \hline \end{array}$$

$$\begin{array}{r} x + 6 > 4 \\ -6 \quad -6 \\ \hline \end{array}$$

$$x > -2$$

$$(-2, \infty)$$

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Solving a Double Inequality

Solve

$$CD = 3$$

$$3 \left(-3 < \frac{2x+5}{3} \leq 5 \right)$$

$$\begin{array}{r} -9 < 2x+5 \leq 15 \\ -5 \quad -5 \quad -5 \\ \hline \end{array}$$

$$\begin{array}{r} -14 \leq 2x \leq 10 \\ \frac{-14}{2} \quad \frac{2x}{2} \quad \frac{10}{2} \end{array}$$

$$-7 \leq x \leq 5$$

$$[-7, 5]$$

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$$33) \quad \begin{array}{r} -1 < 4x - 1 \leq 11 \\ +1 \qquad \qquad +1 \qquad +1 \\ \hline \end{array}$$

$$\frac{0}{4} < \frac{4x}{4} \leq \frac{12}{4}$$

$$0 < x \leq 3$$

$$(0, 3]$$

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45)

$$3(4) \geq \left(\frac{2y-5}{3} \right) \geq (-2)$$

$$\begin{array}{r} 12 \geq 2y - 5 \geq -6 \\ +5 \quad \quad +5 \quad +5 \\ \hline \end{array}$$

$$\frac{17}{2} \geq \frac{2y}{2} \geq \frac{-1}{2} \quad \left[-\frac{1}{2}, \frac{17}{2} \right]$$

$$\frac{17}{2} \geq y \geq -\frac{1}{2}$$

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Aug 25-2:52 PM