

Intermediate Algebra Skill

Solving Linear Inequalities: Fractional Coefficients

Solve the linear inequalities:

$$1) \frac{1}{2}x - 5 \geq \frac{1}{3}$$

$$2) \frac{2}{7}x + 3 < \frac{5}{14}$$

$$3) -\frac{4}{3}x + \frac{5}{6} < \frac{3}{2}$$

$$4) \frac{5}{2} - \frac{7}{6}x > \frac{5}{9}$$

$$5) \frac{2}{5}y + \frac{1}{3} \geq \frac{2}{3}y - \frac{1}{4}$$

$$6) -\frac{8}{3}y + \frac{3}{5} \leq -\frac{1}{3}y - \frac{7}{10}$$

$$7) \frac{1}{4}(2y - 3) + \frac{3}{5}(y + 1) < \frac{3}{2}(y + 2) - \frac{1}{3}(y - 2)$$

$$8) -\frac{1}{6}(3y - 2) + \frac{5}{9}(y - 3) > \frac{1}{3}(2y - 1) - \frac{5}{12}(y + 4)$$

$$9) 1 - \frac{2}{3}\left[w - \frac{1}{2}(w + 2)\right] + \frac{3}{5}\left[-w + \frac{2}{3}(1 - w)\right] \leq w + 2$$

$$10) 6 - \frac{2}{5}\left[\frac{3}{2}w - \frac{1}{4}(w + 4)\right] - \frac{4}{5}\left[-\frac{1}{4} + \frac{1}{8}(w - 4)\right] \geq -2w - 7$$

Answers to Solving Linear Inequalities: Fractional Coefficients

1) $\left\{x \mid x \geq \frac{32}{3}\right\}; \left[\frac{32}{3}, \infty\right)$

2) $\left\{x \mid x < -\frac{37}{4}\right\}; \left(-\infty, -\frac{37}{4}\right)$

3) $\left\{x \mid x > -\frac{1}{2}\right\}; \left(-\frac{1}{2}, \infty\right)$

4) $\left\{x \mid x < \frac{5}{3}\right\}; \left(-\infty, \frac{5}{3}\right)$

5) $\left\{y \mid y \leq \frac{35}{16}\right\}; \left(-\infty, \frac{35}{16}\right]$

6) $\left\{y \mid y \geq \frac{39}{70}\right\}; \left[\frac{39}{70}, \infty\right)$

7) $\left\{y \mid y > -\frac{229}{4}\right\}; \left(-\frac{229}{4}, \infty\right)$

8) $\left\{y \mid y < \frac{24}{7}\right\}; \left(-\infty, \frac{24}{7}\right)$

9) $\left\{w \mid w \geq \frac{1}{35}\right\}; \left[\frac{1}{35}, \infty\right)$

10) $\{w \mid w \geq -10\}; [-10, \infty)$