



Math Olympiad and Problem Solving Programs
E120 - Honors Algebra Problem Solving
Problem Set 25.1 - Inequalities

Name:

Date:

Instruction: Solve the following inequalities.

1. $x < \frac{4}{3}$

2. $x \geq -\frac{6}{5}$

3. $x \leq \frac{23}{8}$

4. $x < 9$

5. $x > 19$

6. $x > \frac{1}{4}$

7. $x \geq -\frac{3}{5}$

8. $x \leq \frac{15}{52}$

9. Multiply both sides by the lowest common denominator, 12:

$$\begin{aligned}\frac{x}{3} + \frac{x-3}{4} - \frac{2x-7}{2} &> 0 \\ 12\left(\frac{x}{3} + \frac{x-3}{4} - \frac{2x-7}{2}\right) &> 0 \\ 4x + 3x - 9 - (12x - 42) &> 0 \\ 7x - 9 - 12x + 42 &> 0 \\ 33 - 5x &> 0 \\ 33 &> 5x \\ x &< \frac{33}{5}\end{aligned}$$



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10. This problem may have been graded incorrectly. Multiply both sides by the lowest common denominator, 60:

$$\begin{aligned}\frac{3x-4}{5} - \frac{x+1}{4} &\leq \frac{2}{3} \\ 60\left(\frac{3x-4}{5} - \frac{x+1}{4}\right) &\leq 60\left(\frac{2}{3}\right) \\ 36x - 48 - (15x + 15) &\leq 40 \\ 36x - 48 - 15x - 15 &\leq 40 \\ 21x - 63 &\leq 40 \\ 21x &\leq 103 \\ \boxed{x \leq \frac{103}{21}}\end{aligned}$$