Section P.5
Part 1

Solving Inequalities Algebraically and Graphically

Objective: Given an inequality, students will find its solutions algebraically, graphically and explain the process.

Study Problems Section P.5

*Page 63 #5-20 (*5), 29-35 odd*

Warm-up

What is an inequality expression? Give some examples

Example

Find the solution set for the inequality.

1. $3x - 5 > 8$

$+5 \quad +5$

$\frac{3x}{3} > \frac{13}{3}$

$x > \frac{13}{3}$

2. $|3x - 5| > 8$

$3x - 5 > 8$ $\quad +5 \quad +5$

$3x > 13$

$x > \frac{13}{3}$

$-(3x - 5) > 8$

$-3x + 5 > 8$

$-3x > 3$

$x < -1$

Example 3

Solve the inequality analytically and graphically.

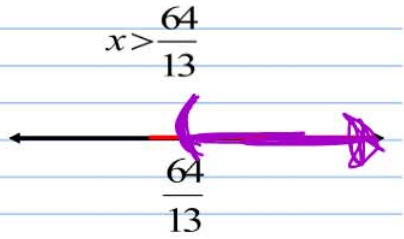
$\frac{5}{2}x - 7 > -\frac{3}{4}x + 9$

$\frac{10}{4}x \quad 2x$

$+\frac{3}{4}x \quad +7 \quad +\frac{3}{4}x \quad +7$

$\frac{4}{13} \cdot \frac{13}{4}x > 16 \cdot \frac{4}{13}$

$x > \frac{64}{13}$



● [,] ≥ ≤

○ (,) < >

Example 4

Solve the inequality analytically and graphically.

$$-5<2-(x+5)\leq 6$$

$-5 < 2-x-5 \leq 6$

$-5 < -3-x \leq 6$

$+3 \quad +3 \quad +3$

$-2 < -x \leq 9$

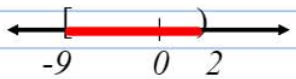
$\div -1 \quad \div -1 \quad \div -1$

$2 > x \geq -9$

$-9 \leq x < 2$

$2>x\geq -9$

$-9\leq x<2$



Example 5

Solve the inequality analytically and graphically.

$$|2x-8|-5>4$$