

Algebra I

6-3

Solving Linear Inequalities

Solve and graph the following:

$$\begin{aligned}
 1) \quad & -5x - 2 \leq 23 \\
 & -5x - 2 + 2 \leq 23 + 2 \\
 & -5x \leq 25 \\
 & x \geq -5
 \end{aligned}$$



$$\begin{aligned}
 2) \quad & -\frac{1}{3}(x+21) < 2 \\
 & -\frac{1}{3}x - 7 < 2 \\
 & -\frac{1}{3}x - 7 + 7 < 2 + 7 \\
 & (-\frac{1}{3}x < 9) (\cdot -3) \\
 & x > -27
 \end{aligned}$$



$$\begin{aligned}
 3) \quad & 2(x+3) - 7x > -21 \\
 & 2x + 6 - 7x > -21 \\
 & -5x + 6 > -21 \\
 & -5x + 6 - 6 > -21 - 6 \\
 & -5x > -27 \\
 & x < \frac{27}{5}
 \end{aligned}$$



$$x < \frac{27}{5} \quad x < -\frac{27}{5}$$

$$\begin{aligned}
 4) \quad & 8x + 3 \leq 2(4x + 1) \\
 & 8x + 3 \leq 8x + 2 \\
 & 8x - 8x + 3 \leq 8x - 8x + 2 \\
 & 3 \leq 2
 \end{aligned}$$

False

When there's no x, either \emptyset or \mathbb{R}



$$\begin{aligned}
 5) \quad & 18 + 4x > -\frac{1}{3}(24 - 12x) \\
 & 18 + 4x > -8 + 4x \\
 & 18 + 4x - 4x > -8 + 4x - 4x \\
 & 18 > -8 \\
 & \text{True}
 \end{aligned}$$



Assignment:
 pg 372
 2-32 even,
 33-35,
 37-40