Unit 5 Objective 4 Remediation

Solving Linear Inequalities

Remember that you switch the inequality sign if you are…

- Multiplying by a negative number
- Dividing by a negative number
- Switching the left and right sides of an inequality

Example One

Solve $30 \geq 2x + 10$

$$30 \geq 2x + 10$$

Subtract 10 from both sides

$$-10 \quad -10$$

$$20 \geq 2x$$

Divide both sides by 2

$$\frac{20}{2} \geq \frac{2x}{2}$$

$$10 \geq x$$

Switch the left and right sides

$$\boldsymbol{x \leq 10}$$

Example Two

Solve $-2(2x - 3) < 5$

$$-2(2x - 3) < 5$$

Distribute -2

$$-2x + 6 < 5$$

Subtract 6 from both sides

$$-6 \quad -6$$

$$-2x < -1$$

Divide both sides by -2

$$\frac{-2x}{-2} > \frac{-1}{-2}$$

Switch the inequality sign!

$$\boldsymbol{x > \frac{1}{2}}$$

Example Three

Solve $2x - 13 \leq -3x + 2$

$$2x - 13 \leq -3x + 2$$

Add $3x$ to both sides

$$+3x \qquad +3x$$

$$5x - 13 \leq 2$$

Add 13 to both sides

$$+13 \quad +13$$

$$5x \leq 15$$

Divide both sides by 5

$$\frac{5x}{5} \leq \frac{15}{5}$$

$$\boldsymbol{x \leq 3}$$

Solve the following inequalities.

1. $25 < 2x + 5$
2. $-x - 7 \geq -9$
3. $14x + 2 < -26$
4. $-4 + \frac{1}{2}x \geq -12$
5. $10 > 2(x - 1)$
6. $-(2x - 6) \geq -14$
7. $\frac{1}{6}(12x + 6) > 7$
8. $4 \leq -\frac{3}{8}(16x - 8)$
9. $5 - x > 9 + x$
10. $-4 + 5x \geq 3 - x$
11. $4x + 1 < 2x + 5$
12. $\frac{1}{2}x \leq 2 + x$