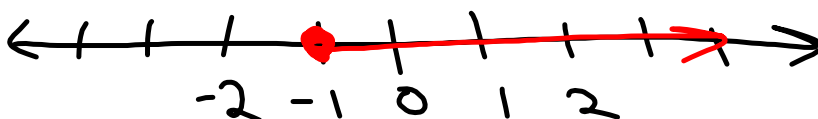
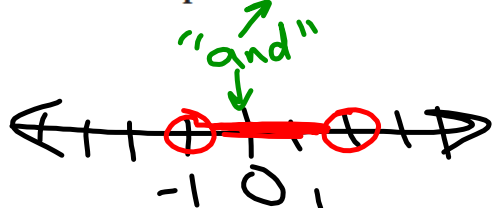
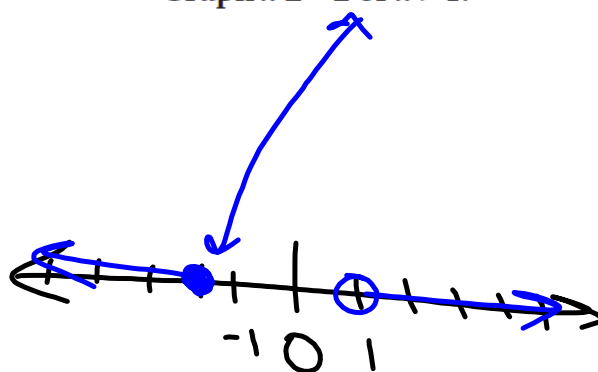


1.6 Solve Linear Inequalities

EXAMPLE 1 Graph simple inequalities

Graph $x \geq -1$



EXAMPLE 2 Graph compound inequalitiesGraph $-1 < x < 2$.Graph $x \leq -2$ or $x > 1$.

EXAMPLE 4 Solve an inequality with a variable on both sidesSolve $5x + 2 > 7x - 4$. Then graph the solution.

$$\begin{array}{r} 5x + 2 > 7x - 4 \\ \cancel{-5x} \quad \quad \quad \cancel{-5x} \\ \hline \end{array}$$

$$\begin{array}{r} 2 > 2x - 4 \\ \cancel{-4} \quad \quad \quad \cancel{-4} \\ \hline \end{array}$$

$$\begin{array}{r} 6 > 2x \\ \cancel{2} \quad \quad \quad \cancel{2} \\ \hline \end{array}$$

$$\begin{array}{|l} 3 > x \\ x < 3 \end{array}$$



EXAMPLE 5 Solve an "and" compound inequalitySolve $-4 < 6x - 10 \leq 14$. Then graph the solution.

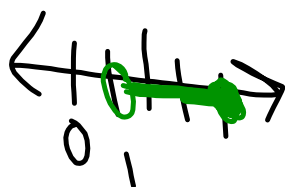
$$-4 < 6x - 10 \leq 14$$

$$-4 < 6x - 10$$

$$6x - 10 \leq 14$$

$$\begin{array}{l} -4 < 6x - 10 \leq 14 \\ +10 \quad \quad +10 \quad +10 \end{array}$$

$$\begin{array}{l} \frac{6}{6} < \frac{6x}{6} \leq \frac{24}{6} \\ \boxed{1 < x \leq 4} \end{array}$$



EXAMPLE 6 Solve an "or" compound inequalitySolve $3x + 5 \leq 11$ or $5x - 7 \geq 23$. Then graph the solution.

$$3x + 5 \leq 11$$

$-5 \quad -5$

$$\cancel{3}x \leq \frac{6}{\cancel{3}}$$

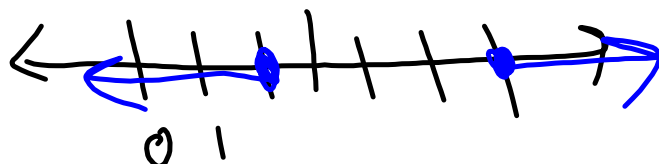
$$x \leq 2$$

$$5x - 7 \geq 23$$

$$\frac{5x}{\cancel{5}} \geq \frac{30}{\cancel{5}}$$

$$x \geq 6$$

$$x \leq 2 \quad \text{or} \quad x \geq 6$$



$$\begin{array}{l} 5 - 2x < 11 \\ -5 \quad -5 \\ -2x < 6 \\ \frac{-2x}{-2} < \frac{6}{-2} \\ \boxed{x > -3} \end{array}$$
$$\begin{array}{l} 5 - 2x < 11 \\ 5 < 2x + 11 \\ -5 < 2x \\ \frac{-5}{2} < x \\ \boxed{-3 < x} \end{array}$$