Graphing Linear Inequalities and Systems of Inequalities Video Lecture

Section 9.4

Course Learning Objectives:

Solve certain types of linear inequalities.

Weekly Learning Objectives:

1) **Graph a linear inequality in two variables.**
2) **Solve a system of linear inequalities.**

Graphing Linear Inequalities and Systems of Inequalities

How to Graph a Linear Inequality in Two Variables:

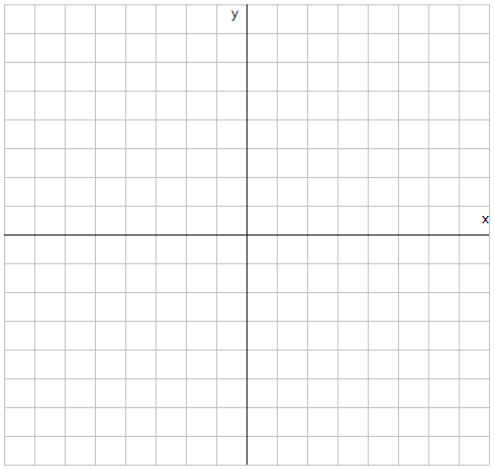
a) Draw a boundary line: Replace the inequality symbol with an equal sign and graph the line. Use a solid line if the inequality is $\leq$ or $\geq$. Use a dashed line if the inequality is < or >.

b) Choose a test point not on the line and substitute into the original inequality.

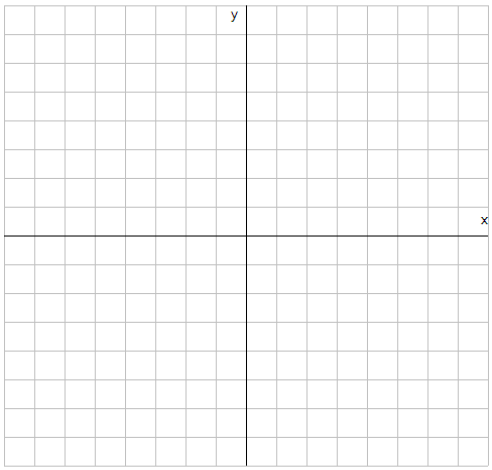
c) If the test point gives a true inequality, shade the region containing the test point. If the test point gives a false inequality, shade the other side of the line.

Examples:

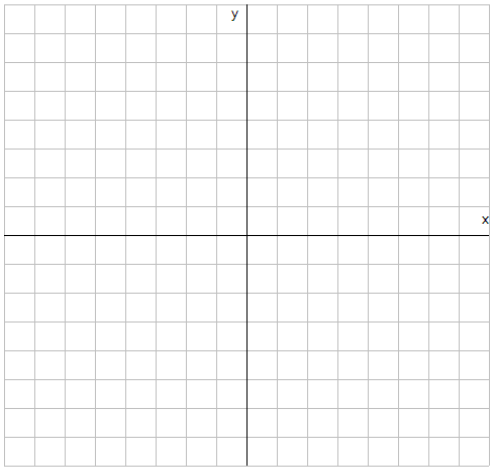
Graph x + y < -3



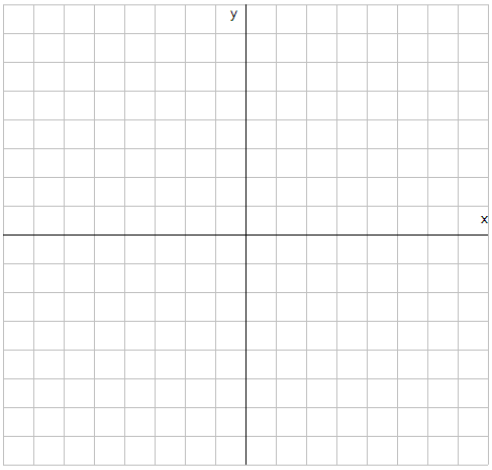
Graph x + 2y $\geq$ 0



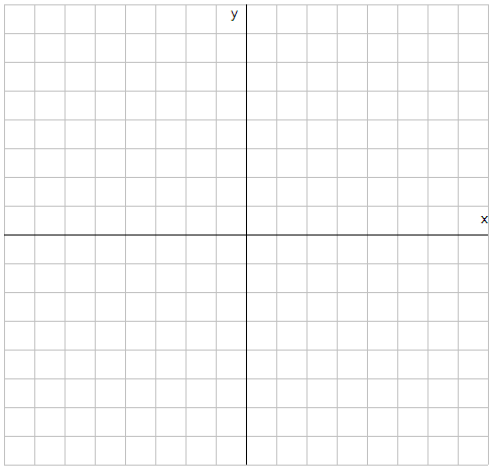
Graph 3y > 3



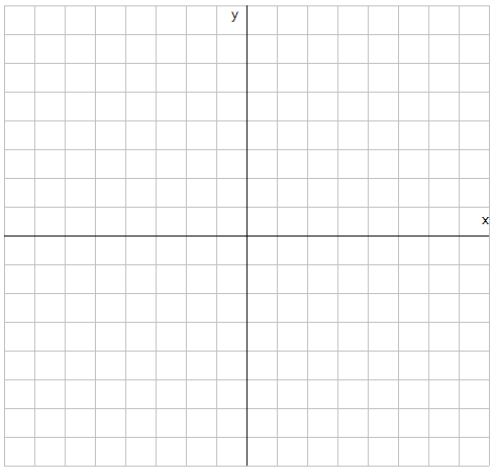
Graph x - y > 2 AND x ≥ 3



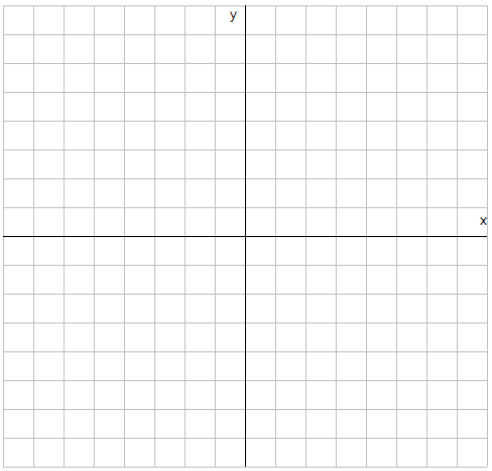
Graph x + y ≥ 1 OR x + y ≤ 4



Graph |y| < 5

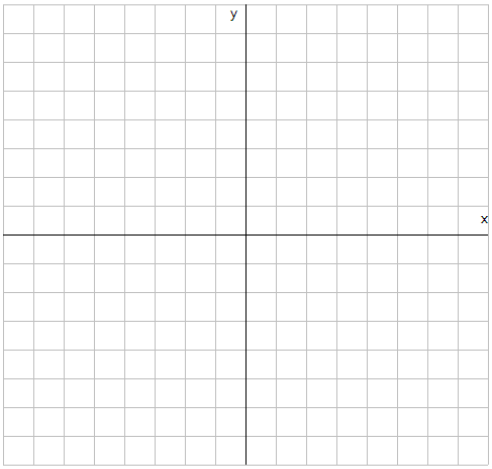


Graph the system: $\begin{cases} 2x \le y \\ x + 4y \ge 4 \end{cases}$



Graph:

$$\begin{cases} 2x - 3y \leq 6 \\ y \geq 0 \\ y \leq 4 \\ x \geq 0 \end{cases}$$



Graph:

$$\begin{cases} x \geq 0 \\ y \geq 0 \\ 2x + y \leq 4 \\ 2x - 3y \leq 6 \end{cases}$$