

Warm-Up Notes

MAT 100: ELEMENTARY ALGEBRA

Fall 2026

SECTION 4.7 GRAPHS OF LINEAR INEQUALITIES

Install — 10 minute lesson

Objectives of this Section

- Verify solutions to an inequality in two variables
- Recognize the relation between the solutions of an inequality and its graph
- Graph linear inequalities

Skills**Introduced in this section:**

- **LIN.GI** — Graphing inequalities

Also practiced: NUM.EV (Evaluating Expressions), WRD.NM (Naming the model).

Lesson

A linear inequality doesn't have one solution or even a line of solutions — it has a whole half of the plane. The line $Ax + By = C$ is the boundary between the two halves. Whether that boundary belongs to the solution set depends on whether the inequality is strict, and which half you shade depends on a single test point.

I do

Watch. Graph the region in the plane consisting of all points (x, y) that satisfy the inequality $x - y < -3$.

We do

Together. Determine whether the ordered pair $(-2, 6)$ satisfies the inequality $x + y > 4$.

You do

Your turn. Determine whether the ordered pair $(0, 3)$ satisfies the inequality $y < x + 2$.

Your turn. Determine whether the ordered pair $(-6, -3)$ satisfies the inequality $y > x - 3$.

Practice

1. Determine whether the ordered pair $(1, 0)$ satisfies the inequality $y > x - 3$.
2. Determine whether the ordered pair $(1, 1)$ satisfies the inequality $x + y > 2$.
3. Graph the region in the plane consisting of all points (x, y) that satisfy the inequality $x - y \geq -2$.
4. Determine whether the ordered pair $(4, -3)$ satisfies the inequality $x + y > 2$.