

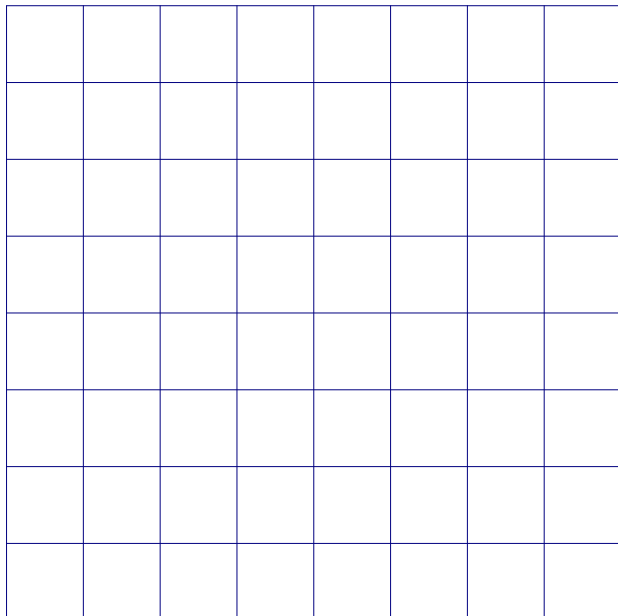
Section 1.3: Linear Inequalities in the Plane

Definition: *linear equality*

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Definition: *half-plane*

Example 1: Sketch the half-plane defined by $2x + y < 1$.



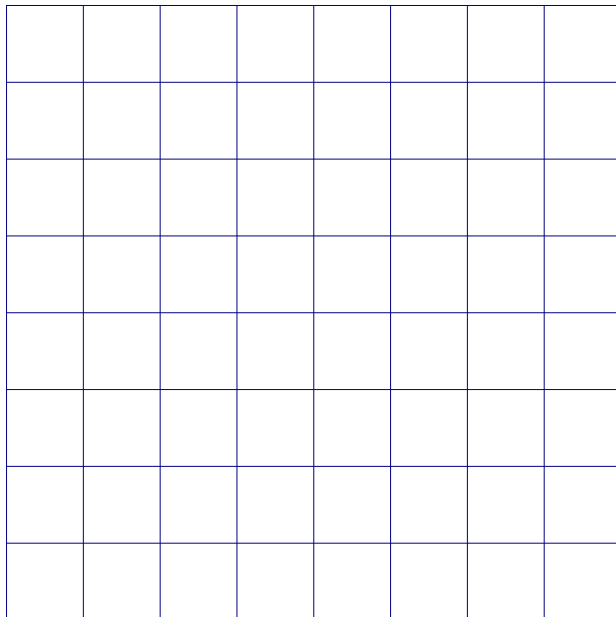
Definition: *system of linear inequalities*

Definition: *the feasibility region*

Example 2: Graph the region defined by the system of inequalities and find the corner points.

$$x + 2y \geq 4$$

$$-2x + 3y \geq -6$$



Example 3: A certain shingle company produces two kinds of shingles. The first kind takes 250 pounds of asphalt and 100 pounds of gravel to make. The second kind takes 200 pounds of asphalt and 25 pounds of gravel to make. The company has 40,000 pounds of asphalt and 10,000 pounds of gravel on hand. Find the linear mathematical model (i.e. the set of linear inequalities) that describes all the feasible combinations of shingle production. Graph the feasibility region and find the corner points.

