

Exploring Systems of Linear Inequalities

Foundations of Mathematics 11

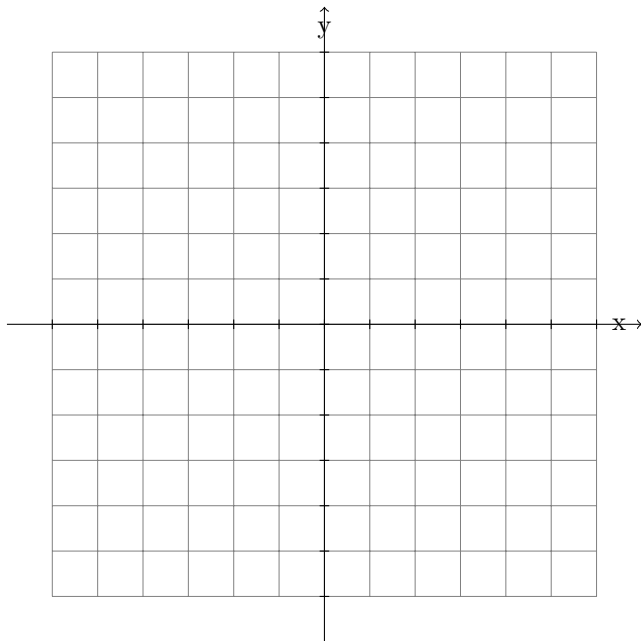
November 2024

Part 1: Graphing Systems of Linear Inequalities

Graph the following systems of linear inequalities on the grid below. Be sure to shade the appropriate regions and label the boundary lines. Also, specify the set of numbers (real, integer, or whole numbers) for each system using the notation provided.

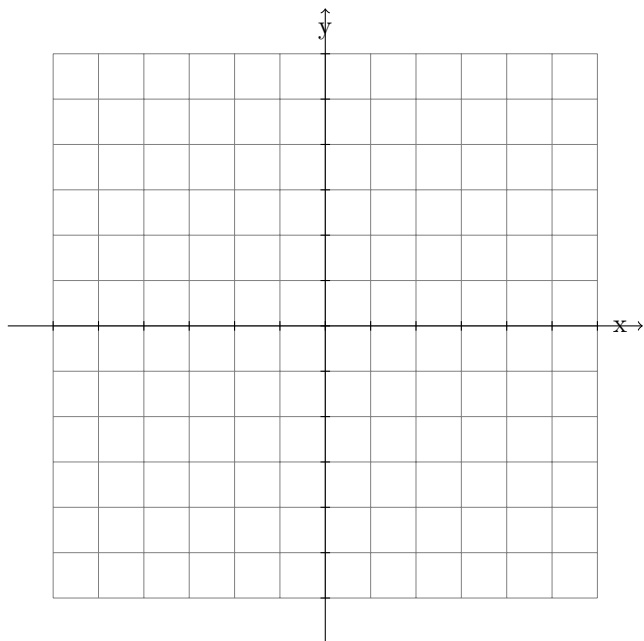
1. Graph the system of inequalities: (Put in Slope-Intercept form and verify with a test point)

$$\{(x, y) \mid x + y \leq 4, x \in \mathbb{R}, y \in \mathbb{R}\} \quad \text{and} \quad \{(x, y) \mid x - y \geq 1, x \in \mathbb{R}, y \in \mathbb{R}\}.$$



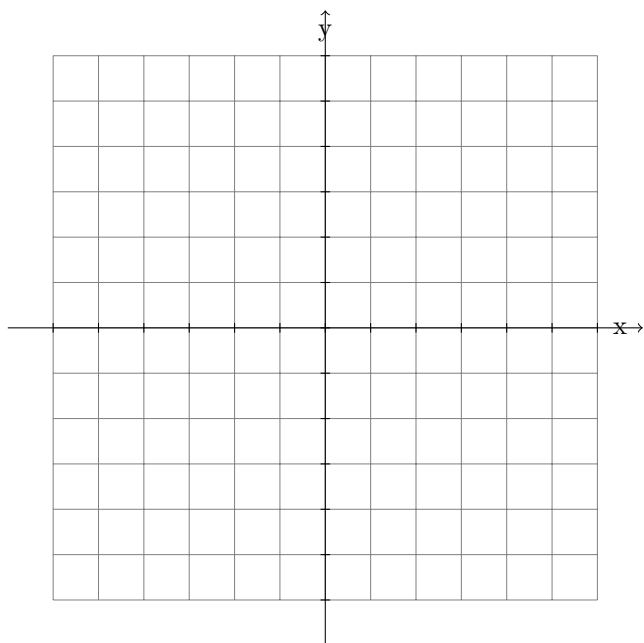
2. Graph the system of inequalities: (Put in Slope-Intercept form and verify with a test point)

$$\{(x, y) \mid 2x + y \geq 6, x \in \mathbb{Z}, y \in \mathbb{Z}\} \quad \text{and} \quad \{(x, y) \mid x - 2y < 4, x \in \mathbb{Z}, y \in \mathbb{Z}\}$$



3. Graph the system of inequalities: (Put in Slope-Intercept form and verify with a test point)

$$\{(x, y) \mid -6x < 4 - 2y, x \in \mathbb{W}, y \in \mathbb{W}\} \quad \text{and} \quad \{(x, y) \mid 15 - 3y \geq 3x, x \in \mathbb{W}, y \in \mathbb{W}\}.$$



4. Graph the system of inequalities: (Put in Slope-Intercept form and verify with a test point)

$$\{(x, y) \mid -x + 2y \geq 4, x \in \mathbb{R}, y \in \mathbb{R}\} \quad \text{and} \quad \{(x, y) \mid 3x + y < 7, x \in \mathbb{R}, y \in \mathbb{R}\}$$

