

MATH 210 FINITE MATHEMATICS

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3.1 Graphing Linear Equalities

Definition 1: Two Forms of a Linear Equation

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Definition 2: Linear Inequalities

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Definition 3: Boundary and Solution Set

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Steps 1

1. Draw the line by replacing the inequality with an equals
2. Pick a test point on one side of the line
3. If the inequality is satisfied, shade that side
4. If the inequality is not satisfied, shade the other side

Example 1

Graph $2x - 3y \geq 6$

Example 2

Graph $x \geq -1$ and $0 \leq y \leq 2$

Steps 2: Graphing a System of Linear Inequalities

1. Graph the two linear inequalities
2. The solution Set, S , is the region where the inequalities are both TRUE.

Example 3

Graph the solution set for

$$\begin{aligned}x - 2y &\leq 1 \\ 3x + 2y &\geq 6\end{aligned}$$

Example 4

Graph the solution set for

$$x + y \leq 4$$

$$2x + y \leq 6$$

$$2x - y \geq -1$$

$$x \geq 0 \quad , \quad y \geq 0$$

Definition 4

1. Bounded:
2. Unbounded: