

Section 7.6 Guided Notebook

Section 7.6 Systems of Inequalities

- Work through Objective 1
- Work through Objective 2
- Work through Objective 3
- Work through Objective 4
- Work through Objective 5
- Work through Objective 6

Section 7.6 Systems of Inequalities

Section 7.6 Objective 1 Determine If an Ordered Pair Is a Solution to an Inequality in Two Variables

Given an inequality in the variables x and y , we can determine if the ordered pair (a, b) is a solution to the inequality by doing what?

Work through the video with Example 1 and take notes below.

Determine if the given ordered pair is a solution to the inequality $-2x + y^2 \leq 4$.

a. $(2, -1)$

b. $(-2, 0)$

c. $\left(-\frac{1}{2}, \frac{7}{2}\right)$

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Section 7.6 Objective 2 Graphing a Linear Inequality in Two Variables

What is the definition of a **linear inequality in two variables**?

What is a **boundary line**?

What are the three **Steps for Graphing Linear Inequalities in Two Variables**?

Step 1.

Step 2.

Step 3.

Work through the interactive video with Example 2 and take notes below.

Graph each inequality.

a. $x - 2y \geq 4$

b. $3y < 2x$

c. $x < -2$

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Section 7.6 Objective 3 Graphing a Nonlinear Inequality in Two Variables

What are the three **Steps for Graphing Nonlinear Inequalities in Two Variables**?

Step 1.

Step 2.

Step 3.

According to the note in your eText (after the steps above) in order to be certain that all of the solution set has been identified it may be necessary to do what? When is this necessary?

Work through the interactive video with Example 3 and take notes below.

Graph each inequality.

a. $x^2 + y^2 \geq 9$

b. $9y^2 - 4x^2 \leq 36$

c. $x - y^2 > 1$

Section 7.6 Objective 4 Determining if an Ordered Pair is a Solution to a System of Inequalities in Two Variables

What is the definition of a **system of inequalities in two variables**?

Work through the video with Example 4 taking notes below.

Determine which ordered pairs are solutions to the given system.

a. $2x - 3y \leq 9$
 $2x - y \geq -1$

i. (1, -2) ii. (-1, 2) iii. (3, -1)

b. $x^2 - y^2 \leq 25$
 $x - y > 1$

i. (-1, -3) ii. (0, 5) iii. (-3, 4)

Section 7.6 Objective 5 Graphing a System of Linear Inequalities in Two Variables

Work through the animation with Objective 5 and take notes below.

Graph the following system of linear inequalities.

$$2x - 3y \leq 9$$

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

What are the two **Steps for Graphing Systems of Linear Inequalities in Two Variables?**

Step 1.

Step 2.

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Work through the interactive video with Example 5 and take notes below.

Graph each system of linear inequalities in two variables.

a. $x + y > 2$
 $2x - y \leq 6$

b. $x - 3y > 6$
 $2x - 6y < -9$

c. $4x > y$
 $x - 3y < 9$
 $x + y < 4$

Section 7.6 Objective 6 Graphing a System of Nonlinear Inequalities in Two Variables

What are the two **Steps for Graphing Systems of Nonlinear Inequalities in Two Variables?**

Step 1.

Step 2.

Work through the interactive video with Example 6 and take notes below.

Graph each system of nonlinear inequalities in two variables.

a. $x^2 + y^2 \leq 25$
 $x - y > 1$

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b. $x - y^2 \geq 4$
 $x - y \leq 6$

c. $4x^2 + 9y^2 \leq 36$
 $x^2 + y \leq -2$