

# Math 11 Pre-Calculus LG 15&16

## Linear and Quadratic Inequalities

### INTRODUCTION:

A CNC machine is a device used in the manufacturing industry to cut shapes into solid blocks of material. It is the main device used in creating aluminum wheels for cars, and you have probably seen it on Orange County Choppers. In order to program this device correctly, the person needs to understand how to eliminate the unwanted material. This often involves mathematical equations using Linear and Quadratic Inequalities.

### LEARNING GUIDE EXPECTATIONS:

On the completion of this learning guide you will be able to:

- 1) Explain how to find the solution for a two-variable linear equation.
- 2) Represent and solve a problem that involves a quadratic inequality in one variable including a graph.
- 3) Determine the solution of a quadratic equation using strategies like case analysis, graphing, roots and test points, or sign analysis.

### EVALUATION:

You are ready to progress to the next learning guide when you can demonstrate your understanding of the above expectations. Please refer to your Mathematics 11 Pre-Calc Marks Record Sheet to determine the assessment.

### RESOURCES NEEDED:

 Math 11 Pre-Calc Text

 THSS Math 11 Pre-Calc Learning Guides.

### LEARNING ACTIVITIES:

 **Expectation #1: Explain how to find the solution for a two-variable linear equation.**



1. [Watch and take notes on instructional video on Linear Inequalities.](#)



2. In the Math 11 text, complete the Investigation activity on pages 464-465.
3. In the Math 11 text, read and take notes on the material between pages 464-471. Make sure to include the highlighted/bold words.
4. In the Math 11 text, work through Example 1 on pages 466-467. Now complete the **Your Turn** section on page 467.
5. In the Math 11 text, work through Example 2 on pages 469. Now complete the **Your Turn** section on page 469.



6. Read Key Ideas on pages 472. In your math journal, using the graph of a two variable linear inequality, develop a set of step-by-step instructions that can be used to instruct anyone on how to create this graph.



7. Complete the **Check Your Understanding** questions listed below:  
- pages 472-475 #1→6, 8, 9, 11, 13, 15, 17, and 20



**Expectation #2: Represent and solve a problem that involves a quadratic inequality in one variable including a graph.**



1. [Watch and take notes on instructional video on Quadratic Inequalities.](#)



2. In the Math 11 text, Complete the Investigate activities on pages 476→477
3. In the Math 11 text, read and take notes from pages 476-484 making sure to include the highlighted/bold words.
4. In the Math 11 text, work through Example 1 on pages 478-479. Now complete the **Your Turn** section on page 479.
5. In the Math 11 text, work through Example 3 on pages 482. Now complete the **Your Turn** section on page 482.



6. Read Key Ideas on page 484. In your math journal, explain what is meant when a quadratic equation with only one variable is written as an inequality. Use appropriate terminology in your explanation.



7. Complete the **Check Your Understanding** questions listed below:  
- pages 484-487 #1→4, 6→13, 15, 16, 17, 19, and 20



**Expectation #3: Determine the solution of a quadratic equation using strategies like case analysis, graphing, roots and test points, or sign analysis.**



1. [Watch and take notes on instructional video on Quadratic Inequalities in 2 Variables.](#)



2. In the Math 11 text, complete the Investigation activity on pages 488-489.
3. In the Math 11 text, read and take notes on the material between pages 488-496. Make sure to include the highlighted/bold words.
4. In the Math 11 text, choose 3 examples in this section, read and complete the **Your Turn** sections.



5. Read Key Ideas on pages 496. In your math journal, using a graph of a quadratic equation, explain the difference between a quadratic inequality with 2 variables and a quadratic inequality with only one variable.



6. Complete the **Check Your Understanding** questions listed below:  
- pages 496-501 #1→8, 10→13, 15, 16, and 17

## REVIEW AND CHALLENGE



1. In the Math 11 text, complete the Chapter 3 Review pages 198-200.
2. Complete all Journal activities.

**Key terms:** System of linear-quadratic equations, system of quadratic-quadratic equations

## PRACTICE QUIZZES

LG 15 (Linear Inequalities)

[Practice quiz #1](#)

LG 16 (Quadratic Inequalities)

[Practice quiz #1](#)

[Practice quiz #2](#)