Mini-Lecture 1.1
The Distance and Midpoint Formulas

Learning Objectives:

1. Use the Distance Formula
2. Use the Midpoint Formula

Examples:

1. Find the distance between the points (-3,7) and (4,10).

2. Determine whether the triangle formed by points *A*=(-2,2)*, B*=(2,-1)*,* and *C*=(5,4)
   is a right triangle.

3. Find the midpoint of the line segment joining the points *P₁*=(6,-3) and *P₂*=(4,2).

Teaching Notes:

- Go over the terms used in introducing the rectangular coordinate system.
- Tell them the distance formula will be used in several applications later in the course.
- Students don't have much trouble with the distance formula, but they will sometimes reverse the order of the coordinates or will make careless arithmetic mistakes such as using subtraction instead of addition.
- The midpoint formula is also fairly easy for them, but students will sometimes have trouble if the coordinates include fractions.

Answers:

1. $\sqrt{58}$ 　　　2. $No: |AB|^2 = 13, |BC|^2 = 34, |AC|^2 = 53.$ 　　　3. $\left(5, -\frac{1}{2}\right)$