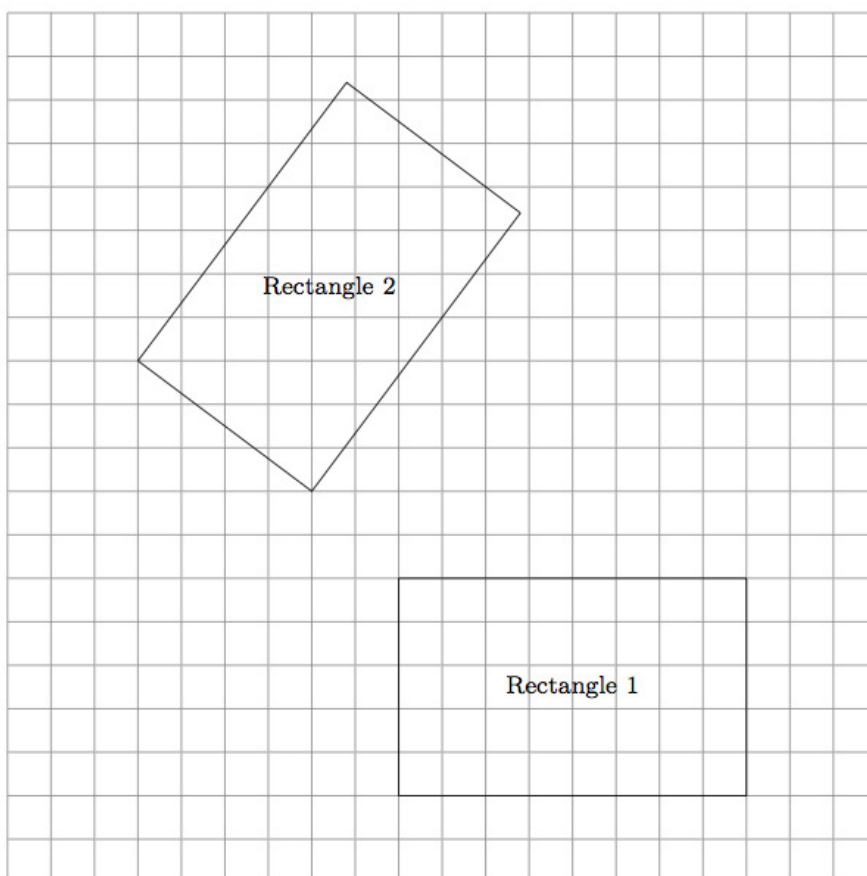


Name:

Math 490, Spring 2013: Homework #9  
Due Thursday, April 4, 2013

- 1 a. Given a rectangle with side lengths 5 and 10 describe the rotations and reflections that carry it onto itself.
  - b. Given a regular hexagon, describe the rotations and reflections that carry it onto itself.
  - c. Given a regular  $n$  – gon, describe the rotations and reflections that carry it onto itself.
2. Given the two rectangles below:
- a. Show that the rectangles are congruent by finding a translation followed by a rotation which maps one of the rectangles to the other.
  - b. Explain why the congruence of the two rectangles can not be shown by translating Rectangle 1 to Rectangle 2.
  - c. Can the congruence of the two rectangles be shown with a single reflection? Explain.



3. Suppose distinct lines  $l_1$  and  $l_2$  are parallel. Suppose a point  $A$  in  $\mathbb{R}^2$  is reflected about  $l_1$  and then the result is reflected about  $l_2$ . Describe a single transformation that expresses the result of these reflections. Extra credit if you prove your conjecture.

From TEXT:

**10.3:** 11, 16

**10.4:** 8, 9, 10, 11, 13, 16, 18

**10.5:** 11, 16