299 SPRING 2009 **HOMEWORK 5**

Turn in your solution to at least two of the problems. **Explain your solution in full sentences. Give detailed reasonings.** Include diagrams and figures if appropriate.

Problem 1. In what base of notation is the multiplication 166·56=8590 correct?

Problem 2. A billiard ball at corner A of a rectangular billiard table $ABCD$ is hit by a cue stick. It starts moving along the angle bisector. It rebounds from sides CD, BC, AB and collides head-on with a ball that is at the center of the table. In what other direction is it possible to strike the ball at point A, so that it rebounds from three different sides and then hits the ball at the center head-on?

Problem 3. Solve the inequality

$$|x+4| - |x^2 - x - 6| \geq 2.$$