This is an open-book, -library, -internet take home exam. You are not allowed to collaborate; I am the only person you are allowed to consult. You can ask questions during office hours, or you can email me at any time during the day.

In a sense the exam is like a homework assignment, but you should treat it with much more care. First, it's worth roughly six times more than a standard homework assignment when everything is weighted to compute course grades. Second, it will be graded more strictly than a standard homework assignment. Third, you don't have the pressure of studying for an in-class exam, so you should expect to spend at least as much time working on this as you would have spent studying otherwise.

As always, you should explain your work, writing complete sentences with reasonably correct grammar. A good rule of thumb is that the work you hand in for this exam should not be your first draft. Figure out the problem on another sheet of paper, organize your thoughts, and *then* write out your solution.

Unless you are told otherwise, you should not use material from a later chapter to solve problems; for example, you should not use results from Chapter 3 to solve a problem from Chapter 2.

Due: Wednesday, 10/20/2010 at the *beginning* of class.

Homework Assignment

Problem 1: (8 Points) Let p and r be rays emanating from the origin with direction indicators $U = (1, 0)$ and $W = (-8, 15)$. Find a *unit* direction indicator V for the ray q which bisects $\angle(p, r)$.

Problem 2: (8 Points) Construct the matrix formula for the the reflection across the line

$$\ell = \{(4, 2) + t(3, 5) : t \in \mathbb{R}\}.$$

Problem 3: (8 Points) Construct the matrix formula for the isometry which sends $\angle(5, 2)(2, 2)(4, 4)$ to $\angle(-1, 4)(-1, 1)(-3, 3)$.

1.6.26: (6 Points)

2.5.19: (7 Points)

3.6.6: (6 Points)

3.6.12: (7 Points)