MAT 1420 Week 9 Written Assignment
20 pts Covers Sections 3.3, 3.4

3.3 – Vectors in the Plane
3.4 – Vectors and Dot Products

Overcome your resistance to drawing pictures.

1. (5 pts) Use vectors to find the interior angles of the triangle with the vertices (- 2, 3), (4, 5), (5, - 6). Round final answers to 4 place

2. Let $\overline{u} = \langle 2, 8 \rangle$ and $\overline{v} = \langle 7, -1 \rangle$.

   a. (5 pts) Find the projection of $\overline{u}$ onto $\overline{v}$, which is to say, "Find $\text{proj}_{\overline{v}}\overline{u}$." Give exact answers. Simplify answers as much as possible, which means simplified radical form if radicals are involved.

   b. (5 pts) Write $\overline{u}$ as the sum of two orthogonal vectors $\overline{w}_1$ and $\overline{w}_2$ such that $\overline{w}_1$ is parallel to $\overline{v}$ and $\overline{w}_2$ is orthogonal to $\overline{w}_1$. Give exact answers. Simplify answers as much as possible, which means simplified radical form if radicals are involved. (Gram-Schmidt Orthogonalization)

3.