Quiz 2   Name:

Directions: Answer each question to the best of your ability. You may use a calculator, but show all work to earn partial credit. The value of each question follows the question.

1. Let $\vec{u} = 2\vec{i} + 3\vec{j} + \vec{k}$, $\vec{v} = -\vec{i} + 2\vec{j} - 3\vec{k}$, and $\vec{w} = 2\vec{i} - \vec{j} - \vec{k}$. For each pair of vectors determine whether the angle between them is less than, equal to, or greater than 90 degrees by calculating the dot products. (3 pts each)

$$\vec{u} * \vec{v} \qquad\qquad\qquad \vec{w} * \vec{v} \qquad\qquad\qquad \vec{u} * \vec{w}$$

2. For which value(s) of λ makes the following 2 vectors perpendicular: $\vec{u} = \lambda\vec{i} + 3\vec{j} + \vec{k}$, and $\vec{v} = \lambda\vec{i} + 2\vec{j} - 7\lambda\vec{k}$ (4 pts)

3. Calculate the projection of $\vec{v}$ onto $\vec{u}$ if $\vec{u} = 2\vec{i} + 2\vec{j} + \vec{k}$, and $\vec{v} = -\vec{i} + 2\vec{j} - 3\vec{k}$. (4 pts)

4. Calculate $\vec{u} \times \vec{v}$. (4 pts)

5. Calculate the equation of the plane containing the points (0,-2,2), (1,0,1), and (2,6,4) (4 pts)