Mathematics 2934-010   Name (please print)

Quiz 1

August 30, 2011

Instructions: Give concise answers, but clearly indicate your reasoning.

I. Draw a sketch of the sphere that that passes through the origin and has center $(1, 1, 2)$. Write an equation
(4) for it (what is the distance from $(1, 1, 2)$ to the origin?).

II. Find a unit vector in the direction of $2\vec{\imath} - \vec{\jmath} + 3\vec{k}$. Find a vector of length π in the direction of $2\vec{\imath} - \vec{\jmath} + 3\vec{k}$.
(3)

III. Find all values of b so that $2\vec{\imath} + b\vec{\jmath} - \vec{k}$ and $2b\,\vec{\imath} - b\vec{\jmath} + \vec{k}$ meet at right angles.
(3)

IV. Find the vector and scalar projections of $\vec{\imath} + 2\vec{\jmath}$ to $-4\vec{\imath} + \vec{\jmath}$. Draw a sketch illustrating them.
(5)