Math 222 Quiz 10

Nov. 18, 2010

Your Name: *Your Section:*

Instructions: Time is 20 minutes and the total score is 10 points. **Wait until the last minute.**

1. Find the center and the radius of the sphere $x^2 + y^2 + z^2 - 6y + 8z = 0$ $(2')$ and the midpoint between the point where the sphere meets the x-axis and the center $(1')$.

2. $\overrightarrow{AB} = <1, 2, 4>$, O is the origin and $A(0, 0, 1)$.
   For $\overrightarrow{AB}$, write it as the magnitude times the direction. $(1')$
   Find the angle between $\overrightarrow{OB}$ and $\overrightarrow{AB}$ $(2')$ and the projection of $\overrightarrow{OB}$ onto $\overrightarrow{OA}$ $(2')$
   Write $\overrightarrow{AB} - \frac{1}{2}\overrightarrow{OA}$ as a linear combination of $\overrightarrow{OB}$ and $\overrightarrow{OA}$ $(2')$
   (Bonus) Find a point P between O and B such that AP is perpendicular to OB $(2')$