Name_____ Sec_____ ID_____

MATH 253   Quiz 1   Spring 2008 | Total | /25
Sections 200,501,502   P. Yasskin

Multiple Choice: (5 points each)

1. Find the equation of the sphere which passes through the points $(2,1,3)$ and $(4,5,-1)$.

   a. $(x-3)^2 + (y-3)^2 + (z-1)^2 = 3$
   b. $(x-3)^2 + (y-3)^2 + (z-1)^2 = 9$
   c. $(x+3)^2 + (y+3)^2 + (z+1)^2 = 9$
   d. $(x-3)^2 + (y-3)^2 + (z-1)^2 = 36$
   e. $(x+3)^2 + (y+3)^2 + (z+1)^2 = 36$

2. The angle between the vectors $\vec{u} = (2,-2,4)$ and $\vec{v} = (-1,2,1)$ is

   a. acute
   b. right
   c. obtuse
   d. none of these

3. A wagon is pulled horizontally from the origin $(0,0)$ to the point $(5,0)$ meters by the force $\vec{F} = (4,3)$ Newtons. Find the work done.

   a. 20 Joules
   b. 15 Joules
   c. 25 Joules
   d. $5\sqrt{5}$ Joules
   e. $\sqrt{5}$ Joules

4. A triangle has vertices $P = (-1,2,-3)$, $Q=(3,2,1)$, and $R = (-1,-1,0)$. Find the angle at P.

   a. $30°$
   b. $45°$
   c. $60°$
   d. $90°$
   e. $120°$

5. A triangle has vertices $P = (-1,2,-3)$, $Q=(3,2,1)$, and $R = (-1,-1,0)$. Find the projection of the side $\overrightarrow{PQ}$ onto the base $\overrightarrow{PR}$.

   a. $\text{proj}_{\overrightarrow{PR}}\overrightarrow{PQ} = \left(\frac{3}{2},0,\frac{3}{2}\right)$
   b. $\text{proj}_{\overrightarrow{PR}}\overrightarrow{PQ} = (-1,-1,0)$
   c. $\text{proj}_{\overrightarrow{PR}}\overrightarrow{PQ} = \left(-\frac{2}{3},-\frac{2}{3},0\right)$
   d. $\text{proj}_{\overrightarrow{PR}}\overrightarrow{PQ} = (0,-3,3)$
   e. $\text{proj}_{\overrightarrow{PR}}\overrightarrow{PQ} = (0,-2,2)$