Math 222 Quiz 12

Dec. 9, 2010

Your Name: *Your Section:*

Instructions: Time is 20 minutes and the total score is 10 points. There is one bonus problem on the back. **Wait until the last minute.**

1. $A(1, 2, 3)$. Two planes $P1 : x + y = 1$ and $P2 : 2x + y - 2z = 2$. Find the angle between planes $(2')$, the parametrizations of the line where the planes intersect $(2')$ and the distance between A and $P2$ $(1')$.

2. (a). $\mathbf{r}(t) = \cos 2t\mathbf{i} + 3\sin 2t\mathbf{j} + 4\mathbf{k}$. Find the velocity, the speed and acceleration at $t = \pi$ $(3')$
   (b). $\frac{d\mathbf{r}(t)}{dt} = \sec t \tan t\mathbf{i} + \tan t\mathbf{j} + 2\sin t \cos t\mathbf{k}$. $\mathbf{r}(0) = \overrightarrow{0}$. Find $\mathbf{r}(\pi/3)$ $(2')$

(Bonus) A particle is moving. If $\mathbf{v} \cdot d\mathbf{v}/dt = 1$ and the speed at $t = 0$ is 0, find the speed at $t = 2$ $(2')$

Furthermore, let it be on $y^2 = 2x$. If at $t = 2$, it's at $(2, 2)$ and moving from left to right, find the veclocity $(2')$.