Math 321 Quiz 3 (G)
March 27/29

Your Name: 
Your Section:

Instructions: You have 20 minutes to solve the following problems within groups.

1. Consider the force field $\vec{F}(\vec{r}) = -\frac{y}{x^2+y^2}\vec{e}_x + \frac{x}{x^2+y^2}\vec{e}_y$. A particle moved for one rotation on the circle $C : x^2 + y^2 = r^2$ counterclockwisely. Calculate the work done by the force field on this particle. (6 pts)

2. Consider the sphere $S : x^2 + y^2 + z^2 = r^2$. Calculate $\int_S (\vec{r}/r) \cdot d\vec{S}$ if we parametrize this surface with $\vec{r}(\theta, \phi) = r \sin \theta \cos \phi \vec{e}_x + r \sin \theta \sin \phi \vec{e}_y + r \cos \theta \vec{e}_z$ where $0 \leq \theta \leq \pi, 0 \leq \phi \leq 2\pi$. Explain your answer by relating this to $dS$. (6 pts)

3. Who helped you most in this quiz? Your complaint on this course. (3 pts)