MATH 261 Quiz 14 Name: .
Spring 15

Show all work. 5 points each.

1) Use Stokes theorem to evaluate $\iint_S curl(\mathbf{F}) \cdot d\mathbf{S}$, where $\mathbf{F} = \langle z, y, x \rangle$ and S is the hemisphere defined by $x^2 + y^2 + z^2 = 9$ with $z \geq 0$. You may leave your answer as an integral with limits of integration.

2) Use Stokes theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$ where $\mathbf{F}(x, y, z) = \langle x + y^2, y + z^2, z + x^2 \rangle$ and C is the triangle with vertices $(1, 0, 0)$, $(0, 1, 0)$, and $(0, 0, 1)$. You may leave your answer as a double integral with limits of integration. Hint: Find equation of the plane that contains the triangle.