> Answer the questions in the spaces provided. **Show all of your work and circle the answer you would like to have graded for each question.**

Name: _____

1. Evaluate $\int_C \vec{F} \cdot d\vec{r}$ where $\vec{F}(x, y, z) = \langle -y^2, x, z^2 \rangle$ and C is the curve of intersection of the plane $y + z = 2$ and cylinder $x^2 + y^2 = 1$ oriented counter-clockwise from above.

2. Evaluate $\iint_S \operatorname{curl} \vec{F} \cdot d\vec{S}$ where $\vec{F} = \langle xz, yz, xy \rangle$ and S is the upwardly oriented part of the sphere $x^2 + y^2 + z^2 = 4$ inside the cylinder $x^2 + y^2 = 1$ and above the xy-plane.