Math 3298 Worksheet 21: Stokes' Theorem

$$\int\int_S (\nabla \times \vec{F}) \cdot \vec{n} \; dS = \oint_{\partial S} \vec{F} \cdot d\vec{r}$$

Group members (1 to 3): _____

(1) Compute the flux of the curl of the vector field
$$\vec{F} = (xyz - xy - yz, \; -x^2 z + y^2 z + x^2 + xz, \; z)$$
through the surface $z = x^2 + y^2$, $z \in [0, 1]$, with upward pointing normal. The implications of Stokes' theorem are very important in making this a tractable problem.