Due Tuesday, Dec. 3, 2013 at the beginning of class.

NAME (print): _____

**No credit for unsupported answers will be given. Clearly indicate your final answer.
Staple all the sheets.**

1. *[3 pts.]* Evaluate $\iint_S xz\,dS$, where S is the triangle with vertices (1,0,0), (0,1,0), and (0,0,1).

2. *[4 pts.]* Use the Stoke's Theorem to evaluate $\int_C \vec{F} \cdot d\vec{r}$, where

$$\vec{F}(x, y, z) = \left\langle x^2 y, \frac{x^3}{3}, xy \right\rangle$$

and C is the curve of intersection of the hyperbolic paraboloid $z = y^2 - x^2$ and the cylinder $x^2 + y^2 = 1$ oriented counterclockwise as viewed from above.

3. [4 pts.] Use the Divergence Theorem to calculate the flux of the vector field

$$\vec{F}(x, y, z) = \langle x^3 + yz, x^2y, xy^2 \rangle$$

across the surface S, where S is the surface of the solid bounded by spheres $x^2+y^2+z^2 = 4$ and $x^2 + y^2 + z^2 = 9$.