

You must show **all** work to receive full credit. All work is to be your own.

October 12

This is a closed books and notes test. Be organized. Total points: **40**

19:35-20:05

1. §10.6 Flux Integrals (3)  $\iint_S \mathbf{F} \cdot \mathbf{n} dA$ . Evaluate  $\iint_S x^2 dydz + y^2 dx dz + z^2 dx dy$ . 20 points

Where  $S$  is the round portion of  $0 \leq z \leq \sqrt{1 - y^2}$ ,  $0 \leq x \leq 2$ . Describe the kind of surface. Show the details of your work.

Evaluate the surface integral  $\iint_S \mathbf{F} \cdot \mathbf{n} \, dA$  by the Divergence Theorem. Show the details.

$\mathbf{F} = [\cos z + xy^2, xe^{-z}, \sin y + x^2z]$ ,  $S$  the surface of the solid bounded by  $z = x^2 + y^2$  and the plane  $z = 4$ .