

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 the integral given below for the following data.

Indicate the kind of surface. (Show the details of your work.)

20 points

$$\mathbf{F} = [0, x, 0], \quad S : x^2 + y^2 + z^2 = 1, \quad x \geq 0, \quad y \geq 0, \quad z \geq 0$$

§10.7 Application of the Divergence Theorem: Surface Integrals $\iint_S \mathbf{F} \cdot \mathbf{n} \, dA$

20 points

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

$\mathbf{F} = [xy, yz, zx]$, S the surface of the cone $x^2 + y^2 \leq 4z^2$, $0 \leq z \leq 2$