

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

$$\mathbf{F} = [\tan xy, x, y], S: y^2 + z^2 = 1, 2 \leq x \leq 5, y \geq 0, z \geq 0$$

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§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.

$\mathbf{F} = [x^2, y^2, z^2]$ ,  $S$ , the surface of the cone:  $x^2 + y^2 \leq z^2$ ,  $0 \leq z \leq h$