

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 for the given data. Describe the kind of surface. Show the details of your work. 20 points

$$\mathbf{F} = [0, \sinh z, \cosh x], S : x^2 + z^2 = 4, 0 \leq x \leq \sqrt{2}, 0 \leq y \leq 5, z \geq 0$$

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

$\mathbf{F} = [3xy^2, xe^z, z^3]$ ,  $S$  is the surface of the solid bounded by  $y^2 + z^2 = 1$  and  $x = -1$ , and  $x = 2$