

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 $\iint_S x \, dydz - z \, dx dz + y \, dx dy$. 20 points

Where S a portion of $x^2 + y^2 + z^2 = 4$ in the first octant, oriented away from the origin. Describe the kind of surface. Show the details of your work.

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

20 points

Evaluate the surface integral by the Divergence Theorem. Show the details.

$\mathbf{F} = [e^x, e^y, e^z]$, S the surface of the cube $|x| \leq 1, |y| \leq 1, |z| \leq 1$