Fall 2020 ENG 5300 Quiz 3 Ruihao Yang

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

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

§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 $x^2 + y^2 \leq 4z^2,\ 0 \leq z \leq 2$