NAME: (print!) Daniel Gameiro   **Section:** 23

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q22FirstLast.pdf) ASAP BUT NO LATER THAN Nov. 16, 8:00pm

Evaluate the surface integral $\int \int_S \mathbf{F} \cdot d\mathbf{S}$ for the given vector field $\mathbf{F}$ and oriented surface S.

$$\mathbf{F}(x, y, z) = \langle xy \, , \, yz \, , \, zx \rangle \quad ,$$

and S is the part of the paraboloid $z = 1 - x^2 - y^2$ that lies above the square $0 \le x \le 1 \, , \, 0 \le y \le 1$ and has upward orientation.

$$\int_0^1 \int_0^1 \left(-xy(-2x) - y(1-x^2-y^2)(-2y) + (1-x^2-y^2)x \right) dx \, dy$$

$$\int_0^1 \int_0^1 \left(2x^2y + (2y^2+x)(1-x^2-y^2) \right) dx \, dy$$

using maple I got $\dfrac{83}{180}$