"QUIZ" for Lecture 24

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E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q24FirstLast.pdf) ASAP BUT NO LATER THAN Dec. 4, 2020, 8:00pm

By using Stokes' Theorem, or otherwise, evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$, where

$$F(x, y, z) = (yz + 2y + 3z)\mathbf{i} + (xz + 2x + 4z)\mathbf{j} + (xy + 3x + 4y)\mathbf{k} \quad ,$$

where C is the curve of intersection of the plane $x+y+z = 1$ and the cylinder $x^2+y^2 = 1$, oriented counterclockwise as viewed from above. Be sure to explain everything.

$$\int_C F \cdot dr = \iint_S \text{curl}(F) \cdot dS$$

$\text{curl}(F) = \langle 4-4, 3-3, X-X \rangle = \langle 0, 0, 0 \rangle$

because the surface is closed and the integrand is a conservative vector field the result is 0.