"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.

$r = 1$

$z = 1 - y - x$

find curl F → $\int_C F \cdot dr \to \iint_S \text{curl} F \cdot dS$

$\text{curl} F = (x+4 - x+4,\ y+3 - y+3,\ z+2 - z+2) =$

$(0, 0, 0)$

Since curl = 0, the integral using Stoke's theorem evaluates to 0.