"QUIZ" for Lecture 19

NAME: (print!) Fayed Reza **Section:** 6

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q19FirstLast.pdf) ASAP BUT NO LATER THAN Nov. 12, 8:00pm

1.

Determine whether or not the vector field

$$F(x, y, z) = y^2 z^3\,\mathbf{i} + 2xyz^3\,\mathbf{j} + 3xy^2z^2\,\mathbf{k}$$

is conservative. If it is conservative, find a function f such that $\mathbf{F} = \nabla f$.

$\frac{\partial P}{\partial y} = 2yz^3 \quad \frac{\partial Q}{\partial x} = 2yz^3$ ✓

$\int xy^3z^3 + x^2yz^3 + 3x^2y^2z^2$

$xy^3z^3 + x^2yz^3 + 3x^2y^2z^2 + F(x,y,z)$

2. Show that the line integral

$$\int_C 2xy^2\,dx + 2x^2y\,dy \quad ,$$

is independent of the path C, and evaluate it if C is *any* path from $(1, 0)$ to $(0, 1)$.

$\int_0^0 2xy^2\,dx + 2x^2y\,dx$

$2xy^3 + 2x^3y \Big|_0^0$

$0 - 0 = 0$