NAME: (print!) ___Daniel Gameiro___ Section: __23__

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q25FirstLast.pdf) ASAP BUT NO LATER THAN Dec.8,2020, 8:00pm

Let
$$F(x, y, z) =$$
$$\langle \cos(\sqrt{1 + x^7} + zy^9) \quad , \quad \tan(x^7 + y^2 + 1/z) \quad , \quad \tan^{-1}(e^{xyz} + \cos^6(x^8 - y + 3z)) \rangle \quad ,$$
and let $\langle P, Q, R \rangle = curl\ \mathbf{F}$. Compute
$$\frac{\partial P}{\partial x} + \frac{\partial Q}{\partial y} + \frac{\partial R}{\partial z} \quad .$$

Be sure to explain everything.

This is equivalent to $div(curl\ F)$ which is always 0

2. Calculate the surface integral
$\iint_S \mathbf{F} \cdot d\mathbf{S}$, where
$$\mathbf{F}(x, y, z) = \langle\, 2x + y + z\, ,\, x + 2y + z\, ,\, x + y + 2z\, \rangle$$
where S is the surface of the box bounded by the planes $x = 0$, $x = 1$, $y = 0$, $y = 4$, $z = 0$, $z = 5$.

using divergence theorem:

$div(F) = 2 + 2 + 2 = 6$

$\iint_S F \cdot dS = 6 \cdot$ Volume enclosed by S

$= 6 \cdot 20 = 120$