

**“QUIZ” for Dec. 7, 2009**

**NAME:** (print!) \_\_\_\_\_ **Section:** \_\_\_\_\_

**E-MAIL ADDRESS:** (print!) \_\_\_\_\_

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  $\langle P, Q, R \rangle = \text{curl } \mathbf{F}$ . Compute

$$\frac{\partial P}{\partial x} + \frac{\partial Q}{\partial y} + \frac{\partial R}{\partial y} \quad .$$

Be sure to explain everything.

**2.** Calculate the surface integral

$\int \int_S \mathbf{F} \cdot d\mathbf{S}$ , 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  $x = 0$ ,  $x = 1$ ,  $y = 0$ ,  $y = 4$ ,  $z = 0$ ,  $z = 5$ .