

“QUIZ” for Lecture 20

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Section: _____

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q20FirstLast.pdf) ASAP BUT NO LATER THAN Nov. 16, 8:00pm

1. Find an equation for the tangent plane to the parametric surface

$$x = v^2, \quad y = u + v, \quad z = u^2,$$

at the point (1, 2, 1). Simplify as much as you can!

$$\begin{aligned} v^2 &= 1 & u+v &= 2 & u^2 &= 1 \\ u &= 1 & v &= 1 & & \\ r &= v^2 i + (u+v)j + u^2 k \\ r_u &= \langle 0, 1, 2 \rangle \\ r_v &= \langle 2, 1, 0 \rangle \\ & \begin{array}{ccc} i & j & k \\ 0 & 1 & 2 \\ 2 & 1 & 0 \end{array} \\ & \begin{array}{l} -2i + 4j - 2k \\ = \langle -2, 4, -2 \rangle \\ -2(x-1) + 4(y-2) - 2(z-1) = 0 \\ z = -x + 2y - 2 \end{array} \end{aligned}$$

2. Evaluate the surface integral

$$\iint_S z \, dS,$$

where S is the triangular region with vertices (2, 0, 0), (0, 2, 0), (0, 0, 2).

I don't know how to do it.