

“QUIZ” for Lecture 20

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Section: 24

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!

$$\begin{aligned} r_u(1,1) &= (0,1,2) & r_v(u,v) &= (2,1,0) \\ r_u(u,v) \times r_v(u,v) &= (-2,4,-2) \\ (-2)(x-1) + 4(y-2) + (-2)(z-1) &= 0 \rightarrow 2y - x - z - 2 = 0 \end{aligned}$$

2. Evaluate the surface integral

$$\iint_S z \, dS,$$

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

$$\int_0^2 \int_0^{2-v} \sqrt{3}(2-u-v) \, du \, dv = \frac{4\sqrt{3}}{3}$$