

"QUIZ" for Lecture 20

NAME: (print!) _____ 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!

$$r = v^2 i + (u + v) j + u^2 k$$

$$r_u = 0i + 1j + 2uk$$

$$r_v = 2v i + 1j + 0k$$

$$r_u(1, 2) = 0i + 1j + 2k$$

$$r_v(1, 2) = 2i + 1j + 0k$$

$$r_u = \langle 0, 1, 2 \rangle$$

$$r_v = \langle 2, 1, 0 \rangle$$

$$r_u \times r_v = \langle 2, -4, 2 \rangle$$

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).

$$z = r$$

$$r(r, \theta) = 0i + 0j + r k$$

$$r_r = 0i + 0j + 1k$$

$$r_\theta = 0i + 0j + 0k$$

$$\int_0^2 \int_0^2 r \, dr \, d\theta$$

$$\int_0^2 2 \, d\theta = 4$$

$$|r_r \times r_\theta| = \sqrt{0} \, dr \, d\theta = dS$$