

Your name: _____

Quiz no. 6 (2110 Multivariable Calculus,
Fall 2009)
November 13, 2009

20 min.

1. (8 points) Let T be the tetrahedron bound by the plane $3x+2y+z = 6$, and by the three coordinate planes. Compute the triple integral:

$$\iiint_T xz \, dV =$$

2. (5 points) Rewrite the following integral as an integral in polar coordinates. *Hint: first make a sketch of the region covered by the iterated integral.* **You don't need to compute the integral!**

$$\int_0^2 \int_x^{\sqrt{8-x^2}} xy \, dy \, dx =$$

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3. (*7 points*) Let S be the body that inside the unit sphere $x^2+y^2+z^2 = 1$, above the cone $z^2 = x^2 + y^2$, and above the first quadrant in the xy -plane (i.e., it is bounded by $x = 0$ and $y = 0$). Compute the following triple integral with spherical coordinates:

$$\iiint_S z \, dV$$