Homework and Quiz 12

Due Wednesday, July 22, 2009

Ungraded homework

For practice, please do

Section 16.8, page 1046, problem 3, 9, 15, 21, 23, 25, 27.
Section 16.9, page 1056, problem 1, 3, 5, 7, 11, 13, 15, 21, 23.

Hand in this assignment on Wednesday; I'll return it to you on Thursday, in time for you to study before the final exam on Friday.

Graded Quiz

(a) Write the point $(0, \sqrt{3}, 1)$ in spherical coordinates.

(b) Let S be the points (x, y, z) such that $x^2 + y^2 + z^2 < 1$. Compute the integral $\iiint_S (1 - x^2 - y^2) dV$ by using spherical coordinates.

(c) Find the Jacobian of the transformation

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

(d) Let T be the triangle with vertices $(0, 0)$, $(2, 1)$ and $(1, 2)$. Evaluate the integral

$$\iint_R (x - 3y)\, dA$$

by making the transformation $x = 2u + v$ and $y = u + 2v$.