Math 53 - Multivariable Calculus

Quiz # 8

October 27th, 2011

Exercise 1. *Use cylindrical coordinates to find the volume of the region E bounded by the paraboloids $z = x^2 + y^2$ and $z = 36 - 3x^2 - 3y^2$.*

Exercise 2. *Describe (with a few words AND a sketch) the solid whose volume is given by the iterated integral $\int_0^1 \int_0^{1-x} \int_0^{2-2z} dy\, dz\, dx$.*

Exercise 3. *Evaluate $\int\int_R \sin(9x^2 + 4y^2) dA$, where R is the region in the first quadrant bounded by the ellipse $9x^2 + 4y^2 = 1$.*