

Calculus: Inclass Homework 11

May 29th, 2008

1. Compute

$$\iint_R \frac{1}{\sqrt{9 - x^2 - y^2}} dA,$$

where R is the larger of the two regions lying above the x -axis, enclosed between $x^2 + y^2 = 1$, $x^2 + y^2 = 4$, and bounded by $y = \sqrt{3}x$.

2. (a) Which space region E minimizes the value of

$$\iiint_E (4x^2 + 4y^2 + z^2 - 4) dV?$$

Give reasons for your choice!

(b) Which space region E maximizes the value of

$$\iiint_E (1 - x^2 - y^2 - z^2) dV?$$

Again give reasons for your choice!