

Calculus III
Fall 2007
Practice Problems

Green and Stokes Theorems

1. Compute

$$\oint_C (3 + e^x)dx + (4 - x^2)dy,$$

where C is the circle $x^2 + y^2 = 1$ oriented counterclockwise.

2. Compute the differential of the form

$$xy \, dx + xz \, dy + xy \, dz$$

.

3. Compute

$$\iint_S x^2 + y^2 + z^2 dS,$$

where S is the surface $\{(x, y, z) \mid z = x^2 + y^2, x^2 + y^2 \leq 1\}$.