Math 225: Calculus III Name:_____
Quiz 10 *April 25/27, 1995* Section:_____

1. Let be the cardiod $r = 3 + 2\sin(\theta)$, $0 \leq \theta \leq 2\pi$, and let be the outward unit normal vector to . Use a version of Green's Theorem to compute the flux integral $\int_{\cdot} ds$ where $= -y\imath + x\jmath$.

2. Let Σ be the portion of the paraboloid $z = 4 - x^2 - y^2$ in the first octant. Compute the surface integral $\int_{\Sigma} z + x^2 + y^2 \, d\sigma$.