Math 3298 Worksheet 41

Group members (2 to 4): _____

(1) Compute the flux of the vector field $G = (-xy + z, cos(x), yz)$ out of the unit sphere $x^2 + y^2 + z^2 = 1$ without directly evaluating $\int\int G \cdot ndS$. (Does $G = \nabla \times F$ for some F?)

(2) Find the maximum value of the integral $\oint F \cdot Tds$, where $F = (y^3 - y, -2x^3)$, over all simple closed curves (oriented counterclockwise). (Use Green's theorem, and consider where the integrand is non-negative.)