

Show all work. 5 points each.

1. Evaluate the line integral $\oint_C xydx + x^2y^3dy$ using Greens Theorem. C is the triangle with vertices $(0, 0)$, $(1, 0)$ and $(1, 2)$.

2. Find the curl of $\mathbf{F} = \langle y^2z^3, 2xyz^3, 3xy^2z^2 \rangle$ and determine if \mathbf{F} is conservative.