

Show all work. 5 points each.

1. Use Green's Theorem to evaluate $\oint_C (y + e^{\sqrt{x}}) dx + (2x + \cos y^2) dy$ where C is the boundary of the region enclosed by $y = x^2$ and $x = y^2$.

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