

Math 301 Quiz 3

(A)

Name:.....ID#:.....Ser:.....

Q.1: Use Stokes' theorem to evaluate the integral $\oint_C F \cdot dr$, where $F = y^3 \mathbf{i} - x^3 \mathbf{j} + z^3 \mathbf{k}$ and C is the trace of the cylinder $x^2 + y^2 = 9$ in the plane $2x + 2y + z = 2$.

Q.2: Use Divergence theorem to evaluate the integral $\iiint_S (F \cdot n) dS$, where $F = \frac{x \mathbf{i} + y \mathbf{j} + z \mathbf{k}}{x^2 + y^2 + z^2}$ and D is the region bounded by $x^2 + y^2 + z^2 = 1$ and $x^2 + y^2 + z^2 = 4$.