King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 301 – Term 172 – Quiz 2

Name:
Student ID #:
Section #:

Question 1. Use Stokes' theorem to evaluate the line integral

$$\oint_C y^3\,dx - x^3\,dy + z^3\,dz$$

where C is the curve formed by intersection of the cylinder $x^2 + y^2 = 1$ with the plane $x + y + z = 2$.

QUESTIONS 2 IS ON THE BACK OF THE PAGE.

Question 2. Use divergence theorem to evaluate

$$\iint_S (x^3\,\mathbf{i} + y^3\,\mathbf{j} + (x^3 + y^3)\mathbf{k})\,dS$$

where S is a cylinder, whose base is a circle with radius 3 sitting on the xy-plane centered at the origin, and whose height is 5.