

NAME:

STUDENT ID:

Problem

The three components of velocity in a flow field are given by:

$$u = x^2 + y^2 + z^2$$

$$v = xy + yz + z^2$$

$$w = -3xz - z^2/2 + 4$$

Determine:

- (a) The volumetric dilatation rate (conservation of mass for incompressible flow field).
- (b) The rotation vector.
- (c) Is this an irrotational flow field?