

October 2, 2013

NAME

Fluids-ID

Quiz 5. The velocity field is given by the equation below;

$$\mathbf{V} = v \mathbf{j} = \left(\frac{8}{t} + 5y \right) \mathbf{j}$$

- 1) Find the unsteady (local) acceleration of a_y
- 2) Find the convective acceleration of a_y
- 3) Find the acceleration field \mathbf{a}

Note: Attendance (+2 points), format (+1 point)

Acceleration:

$$a_x = \frac{\partial u}{\partial t} + u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} + w \frac{\partial u}{\partial z}$$

$$a_y = \frac{\partial v}{\partial t} + u \frac{\partial v}{\partial x} + v \frac{\partial v}{\partial y} + w \frac{\partial v}{\partial z}$$

$$a_z = \frac{\partial w}{\partial t} + u \frac{\partial w}{\partial x} + v \frac{\partial w}{\partial y} + w \frac{\partial w}{\partial z}$$