# Alajemba Evans

# 17/eng06/009

# Mechanical engineering

# ASSIGNMENT 3

1. Given µ= 0.9, , , , 0.003m^3/s
   1. From continuity equation

q = A.u

where

Because Re < 2000, the flow is laminar

1. Given , G = 0.85, ,

, D = 65mm = 0.065m , L = 95m

Rate of flow, Q = A.u

Where

3.319×10^-3=0.0115m^3/s

* 1. Centre line velocity =

But,

m/s

* 1. al frictional drag, fD

Where

* 1. Power required to maintain flow

.7Watts

* 1. Velocity gradient at the pipe wall
  2. Velocity and shear stress 60mm from wall

s

he shear stress can be found as;