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# MEE 322 ASSIGNMENT 3

1. Given µ= 0.9, =1260kg/m^3, , , .003m^3/s
   1. From continuity equation

q = A.u

where

Because Re < 2000, the flow is laminar

1. Given , G = 0.85, ,

=2000×10^3N/m^3, D = 65mm = 0.065m , L = 95m

Rate of flow, Q = A.u

Where

* 1. Centre line velocity =

But,

.948m/s

* 1. rictional drag, fD

Where

* 1. Power required to maintain flow

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

y=R-r and y=60mm=0.06m

The shear stress can be found as;