Problem\_Set\_5

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**Problem\_Set\_5 Questions**

1. laminar gaseous flow through a cylindrical pipe of length, *L* and radius *R* with a centerline axial velocity of *CLVZ*.

A screenshot of a cell phone

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# Question\_1

## Part a)

Since the flow is axisymmetric, the problem can be solved as a 2D flow in r and z. Figure ‎1.1 illustrates shchematic of our geometry.

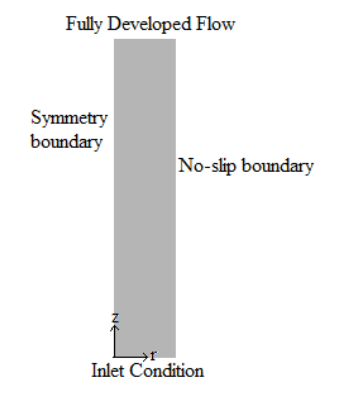


Figure .- Shchematic of 2D geometry

**Assumptions:**

* Axisymmetry
* Constant density
* Constant viscosity
* Fully developed flow at the outflow

Based on these assumptions, the vorticity-velocity equations can be defined as :

|  |  |
| --- | --- |
|  | (‎1.1) |
|  | (‎1.2) |
|  | (‎1.3) |

# References

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