**Coaxial Poiseuille Flow**

In arterial blood flow a plasma layer of viscosity flows adjacent to the arterial wall, while the axial core has viscosity Assuming the pressure gradient is given by

Where is the pressure difference of a section of length determine the velocity profile in each region and the combined flow rate.

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The governing equations for each region are:

Boundary Conditions:

1. is finite
2. at −

Solution of differential equations

Apply boundary conditions.



Velocity profile are (with :

The flowrate is:

If