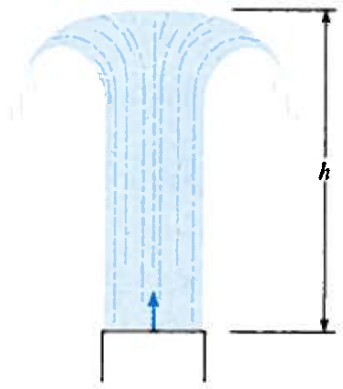
**CE 3305 Engineering Fluid Mechanics**
**Exercise Set 8**
**Summer 2018 – GERMANY**

**Purpose** : Application of concept of local acceleration in fluid flow to estimate pressure.
**Assessment Criteria** : Completion, plausible solutions, use **R** as a calculator.

**Exercises**

1. (Problem 4.41 pg 160) Water ($\rho = 1000 kg/m^3$) is accelerated from rest in a horizontal pipe that is 80 m long and 30 cm in diameter. If the acceleration rate (toward the downstream end) is 5 m/s$^2$, what is the pressure at the upstream end if the pressure at the downstream end is 90 kPa gage?

2. (Problem 4.49 pg 160) Figure 1 is a water jet issuing vertically from a nozzle The water velocity as it exits the nozzle is 18 m/s. Calculate how high $h$ the jet will rise.[1]




PROBLEM 4.49

Figure 1: Vertical jet fountain

[1]Hint: Apply Bernoulli's equation along the centerline.