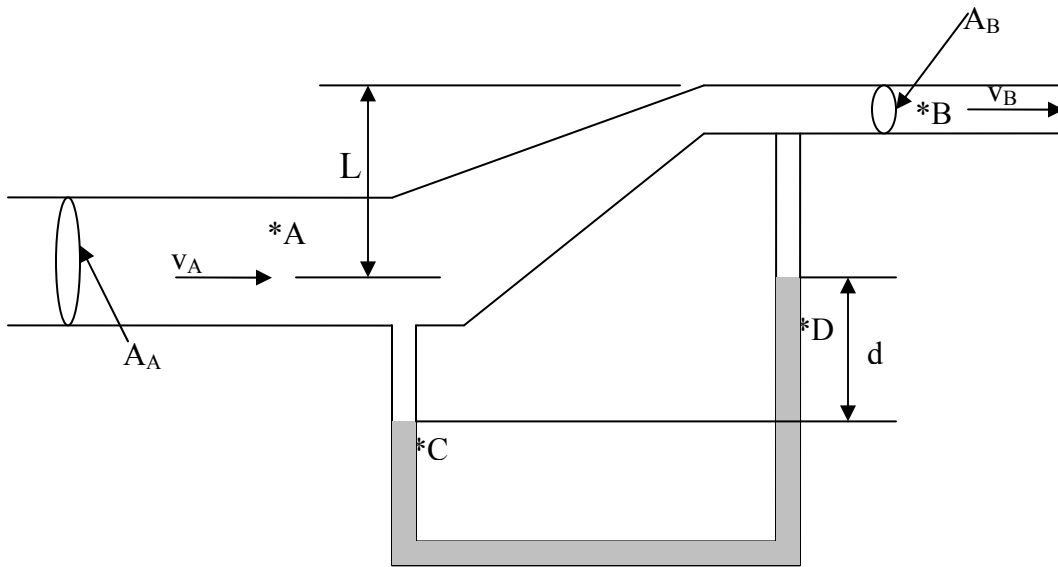


Physics 7A Take-home Quiz:

1. A u-tube manometer is a simple device used to measure pressure differences between points in a pipe of flowing fluid. Water flows through the pipe from point A (cross sectional area A_A) to point B (cross sectional area A_B), some distance L above point A. The u-tube manometer filled with oil (density ρ_o) is connected to the pipe at near points A and B. There is a difference in height d of oil in the manometer between points C and D. Assume the vertical dimension of the manometer is exaggerated in the drawing and the pressure at C and D is that of A and B respectively. In terms of the information given, calculate the velocity of water at point A.



2. Water is filled to a height H behind a dam of width w . Find the total resultant force acting on the dam. Draw the pressure profile with depth. Show that the total torque on the dam acts at $\frac{1}{3}H$ from the dam's base.