

This is Problem 6.17 from *Fundamentals of Thermodynamics* by Borgnakke and Sonntag

A flat channel of depth 1 m has a fully developed laminar flow of air at P_o , T_o with a velocity profile as: $V = 4V_c (1 - x/H)x/H$, where V_c is the velocity on the center-line and x is the distance across the channel as shown in Fig. P6.17. Find the total mass flow rate and the average velocity both as functions of V_c and H .

