



Assignment: _____

Name: _____

Date: ___/___/___

HW#4 → 6.1 (6e), 6.19 (6e), 6.21 (6e), 6.26 (6e)

6.1 In flow over a surface, velocity and temperature profiles are of the forms

$$u(y) = Ay + By^2 - Cy^3$$

and

$$T(y) = D + Ey + Fy^2 - Gy^3$$

where the coefficients A through G are constants. Obtain expressions for the friction coefficient C_f and the convection coefficient h in terms of u_∞ , T_∞ , and appropriate profile coefficients and fluid properties.



HW#4 → 6.1 (6e), 6.19 (6e), 6.21 (6e), 6.26 (6e)

6.21 Experimental results for heat transfer over a flat plate with an extremely rough surface were found to be correlated by an expression of the form

$$Nu_x = 0.04Re_x^{0.9} Pr^{1/3}$$

where Nu_x is the local value of the Nusselt number at a position x measured from the leading edge of the plate. Obtain an expression for the ratio of the average heat transfer coefficient \bar{h}_x to the local coefficient h_x

