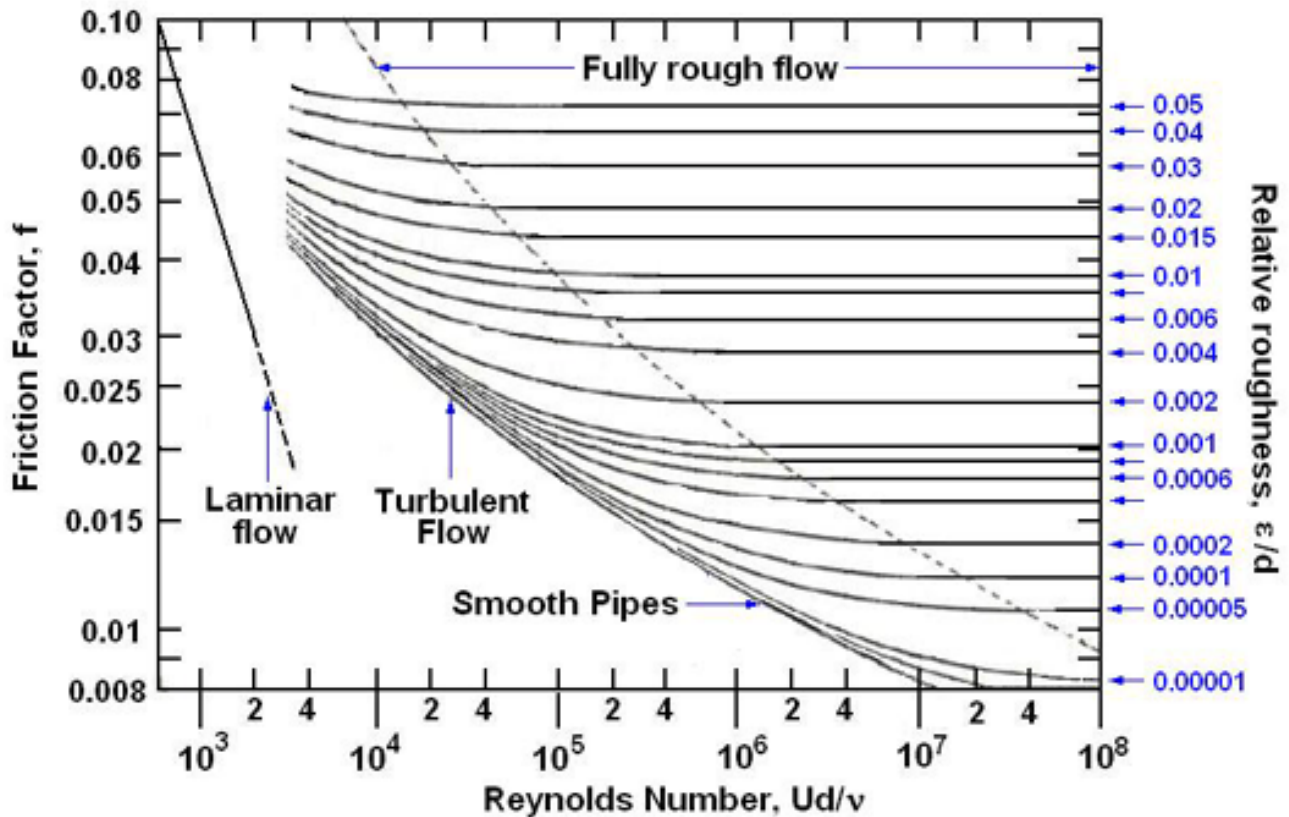


Problem 270B

What is the relation between the friction factor, f , and the Reynolds number, Re , for turbulent pipe flow given the following approximate velocity profile?

$$u^* = 8.7(y^*)^{\frac{1}{7}}$$

Note that $u^* = \bar{u}/u_\tau$ where $u_\tau = (\tau_w/\rho)^{\frac{1}{2}}$ and $y^* = u_\tau y/\nu$.



At a Reynolds number of 10^6 how does the friction factor predicted by this relation compare with the value given by the above graph?