

Problem 241E

The planar flow close to a stagnation point on any bluff, cylindrical body has a potential flow solution in which the velocity outside the boundary layer is proportional to the distance, x , measured along the surface from the stagnation point. This is expressed as $U = Ax$ where A is a known constant. The kinematic viscosity of the fluid is denoted by ν . Use the chart of the Falkner-Skan solutions to find an expression for the laminar boundary layer thickness (defined as the distance from the wall at which $u/U = 0.99$). The expression includes A and ν .