Cankaya University

Faculty of Engineering

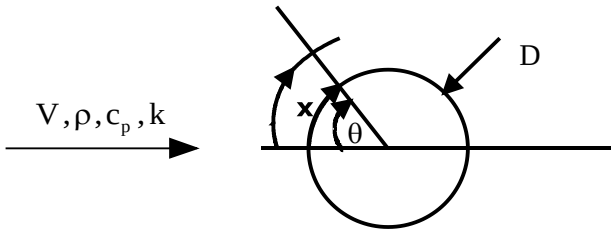
Mechanical Engineering Dpartment

ME 613 Advanced Convective Heat Transfer

Fall 2017

HW# 3

The potential flow solution for velocity along the surface of a cylinder with flow normal at a velocity V is



$$U_\infty = 2V\sin(\theta)$$

where θ is measured from the stagnation point. Assuming that this is a reasonable approximation for air (Pr=0.7)flow on the upstream side of the cylinder, calculate the local Nusselt number as a function of θ for $0 \le \theta \le 90$. Compare these results with experimental data for average Nusselt number around a cylinder.