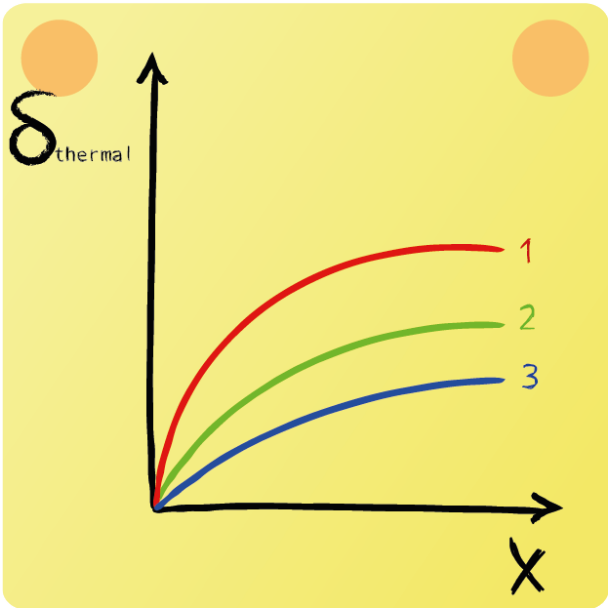
Lecture 2 - Question 2



Consider the following three thermal boundary layers as in the figure for a given flow over a flat plate. For one of the three Pr « 1, for one Pr = 1 and for one Pr » 1. Select the right combinations. Assume constant diffusive momentum transport, steady-state heat transfer and an ideal gas.

1. Pr « 1, 2. Pr = 1, 3. Pr » 1

As the Prandtl number decreases, the diffusive heat transport relative to the diffusive momentum transport becomes higher. A thicker thermal boudnary layer means a smaller heat transfer rate.