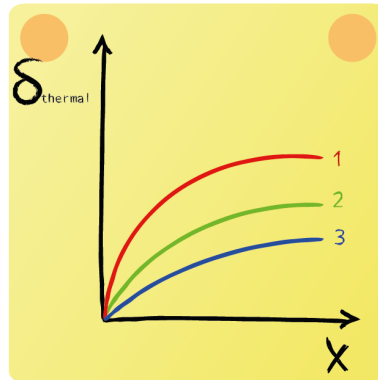




## Lecture 2 Question 2

Consider the following development of three thermal boundary layer thicknesses over a flat plate as in the figure for a given cold flow over a flat hot plate. Their viscous boundary layer is identical. For which of the three cases is the Prandtl Number  $Pr$  the smallest?



Case 1

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