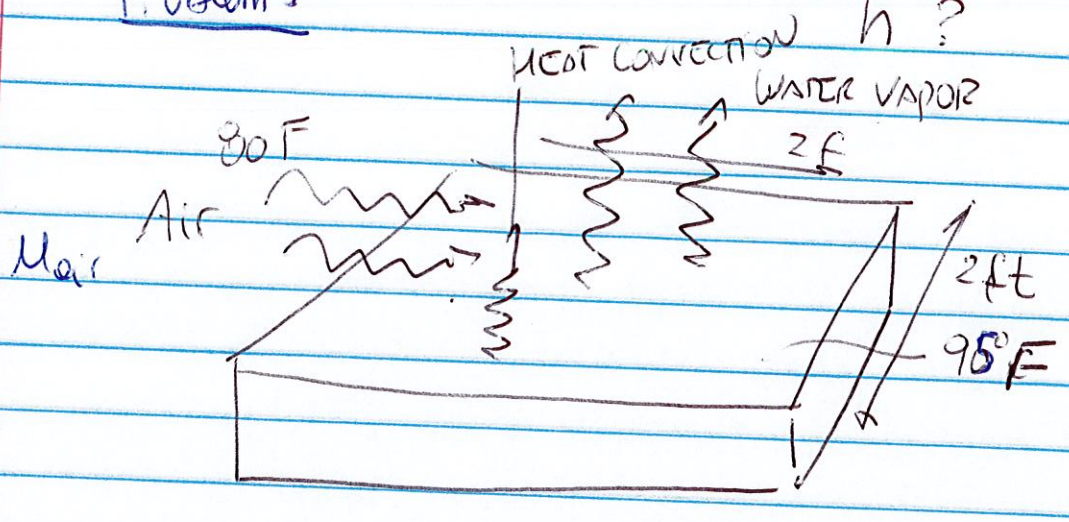
OFFICE HOURS 3-21-19 (1)

Problem 1



We need to determine heat transfer coefficient.

$$Nu_L = 0.664\, Re_L^{1/2}\, Pr^{1/3}$$ ← LAMINAR FLOW

it depends on Re_L.

$$Re_L = \frac{L \times \rho_{air}|_{T_{film}} \times \mu_{air}}{\mu_{air}|_{T_{film}}}$$

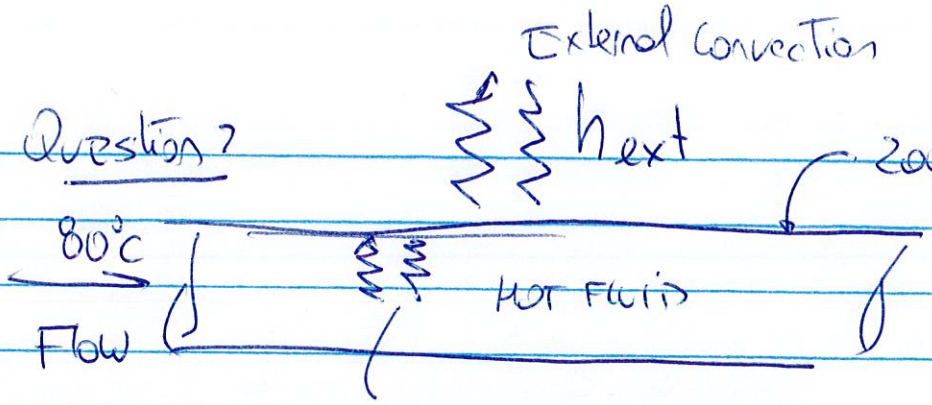
L: length in the direction of the air flow

μ_{air}: viscosity of air

$$T_{film} = \frac{95+80}{2} = [illegible]\ F$$

ASIDE FOR NATURAL CONVECTION

$Re \longrightarrow Ra$ ← $\beta = \frac{-1}{\rho}\frac{d\rho}{dT}$



INTERNAL CONVECTION.

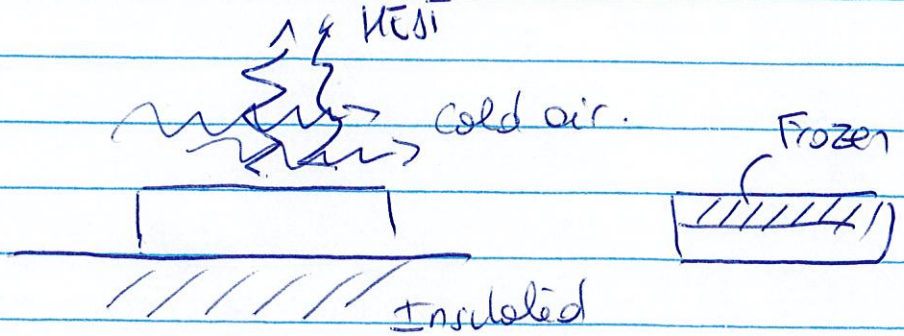
$$Q = hA\,[T_{Sat} - T_{wall}]$$

T_{wall} ↑ 200 ; ↓ 80

Calculate h using correlations for internal convection in a pipe

Question =

Scenery 1



Scenery 2