

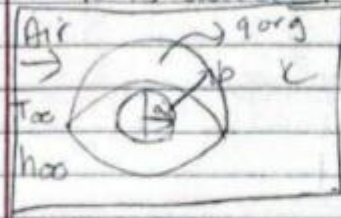
Test #2

①

Purpose:

Determine the temperature distribution & heat transfer rate for a hemispherical element w/ internal heat generation & thermal conductivity. a is the inner r & b is outer r . The system is exposed to air & heat transfer coefficient.

Drawing:



Sources:

- Bayazitoglu, Y., Ozisik, N. "A Textbook for Heat Transfer Fundamentals", Begell House, Inc (2012)
- Published MET 340 material on Canvas
- COMSOL software

Design Considerations:

- Steady state - One dimensional (radial)
- q_r , k , h , T_{oo} are constants

Data & Variables:

$$r_i = a \quad r_o = b$$

$$g = g_0 \frac{b^2}{r^2} \text{ (W/m}^3\text{)}$$

$$\text{heat transfer coeff } h \text{ (W/m}^2\cdot\text{K)}$$

$$\text{Ambient temp } T_{oo}$$

-Subtract .05 from Purpose, missing equation.