WEEK 1   Assignment

Question:

A short summary about the conductive heat transfer and solving the same exercise with L= 0.4 m, A= 20m2, DeltaT= 25, and k=0.78 W/m K using both simple method and using the resistance concept.

Answer:

A).A summary about conductive heat transfer:

Conductive heat transfer is the transfer of heat from higher temperature side to lower temperature side within a material , and the heat transfer though the wall is proportional to its area, and the difference of temperature and the conductivity (willingness of material to transfer).

B).

Method 1:

$$\dot{Q} = KA\frac{\Delta T}{L} = 0.78 \times 20 \times \frac{25}{0.4} = 975W$$

Method 2:

$$R_{WALL} = \frac{L}{KA} = \frac{0.4}{0.78 \times 20} \approx 0.02564 \,^{\circ}\!C/W$$

$$\dot{Q} = \frac{\Delta T}{R_{WALL}} = \frac{25}{0.02564} \approx 975.0W$$