1st week assignment

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

• **Heat transfer** is the physical thermal energy generated by the exchange of heat between two systems. The concepts of temperature and heat flow are two basic principles of heat transfer. The amount of existing thermal energy is determined by the temperature. and the heat flow represents the movement of thermal energy.

Simple method

$$\dot{Q} = kA\frac{\Delta T}{L}$$

$$\dot{Q} = 0.78 \bullet 20 \bullet \frac{25}{0.4}$$

$$\dot{Q} = 975W$$

Resistance concept

$$R_{wall} = \frac{L}{kA}$$

$$= \frac{0.4}{0.78 * 20}$$

$$= \quad 0.0256 \circ \frac{C}{W}$$

$$\dot{Q} = \frac{\Delta T}{R_{Wall}}$$

$$= \frac{25}{0.0256}$$

$$= 976.5\ W$$