Submission 1: Sofia Lopez Mendoza

1. **Short summary about the conductive heat transfer.**

Heat transfer through the wall of a house can be modeled as steady and one-dimensional

The rate of heat conduction through a plane wall

- Is proportional to the average thermal conductivity (willingness of material to transfer heat), the wall area and the temperature difference.
- But is inversely proportional to the wall thickness (the thicker the wall, the less heat goes through it).
- Once the rate of heat conduction is available, the temperature $T(x)$ at any location x can be determined by replacing t by T and L by x.

2. **Solving the same class exercise where L=0.4m, A=20m2, $\boldsymbol{\Delta T = 25}$, and K=0.78w/mK using both simple and resistance methods.**

Simple method

$$\dot{Q} = kA\frac{\Delta T}{L} = 0.78 * 20 * \frac{25}{0.4} = \mathbf{975\ W}$$

Resistance method

$$R_{wall} = \frac{L}{kA} = \frac{0.4}{0.78 * 20} = 0.0256\,°\frac{C}{W}$$

$$\dot{Q} = \frac{\Delta T}{R_{Wall}} = \frac{25}{0.0256°\frac{C}{W}} = \mathbf{976.5\ W}$$