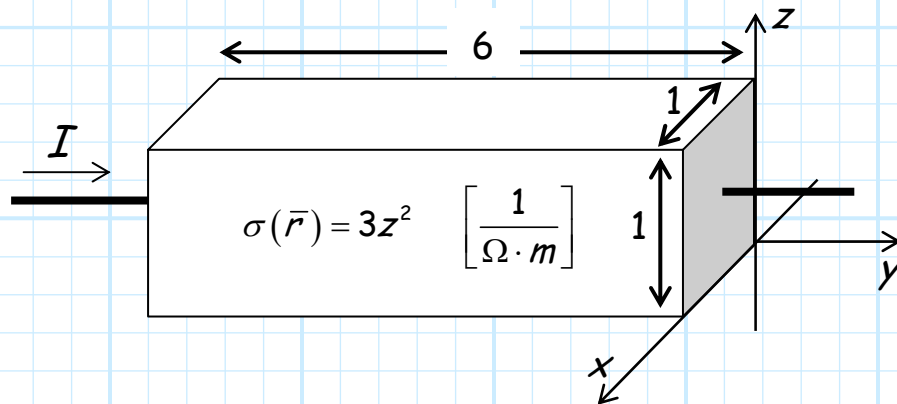


Special Problem 5-2.7

A **resistor** is formed as a long rectangular **volume**, a volume defined as:

$$0 \leq x \leq 1 \quad -6 \leq y \leq 0 \quad 0 \leq z \leq 1$$



This resistor is made of material with **non-uniform** conductivity:

$$\sigma(\vec{r}) = 3z^2 \quad \left[\frac{1}{\Omega \cdot m} \right]$$

The **electric potential** within this resistor is:

$$V(\vec{r}) = -4y \quad [Volts]$$

Determine the **numeric** value of the **resistance** of this resistor.