

SN: _____, Name: _____

Chapter 28-31, Serway; ABSOLUTELY NO CHEATING!

Please write the answers on the blank space or on the back of this paper to save resources.

1. Taking $R = 1.00 \text{ k}\Omega$ and $\varepsilon = 250 \text{ V}$ in Figure 1, determine the direction and magnitude of the current in the horizontal wire between a and e .

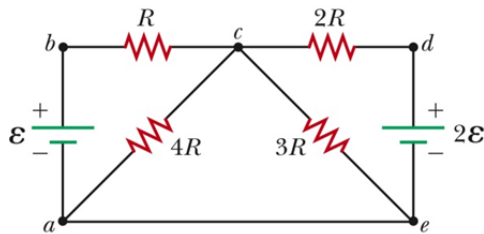


Figure 1

2. Two parallel rails with negligible resistance are 10.0 cm apart and are connected by a resistor of resistance $R_3 = 5.00 \Omega$. The circuit also contains two metal rods having resistances of $R_1 = 10.0 \Omega$ and $R_2 = 15.0 \Omega$ sliding along the rails (Fig. 2). The rods are pulled away from the resistor at constant speeds of $v_1 = 4.00 \text{ m/s}$ and $v_2 = 2.00 \text{ m/s}$, respectively. A uniform magnetic field of magnitude $B = 0.010 \text{ T}$ is applied perpendicular to the plane of the rails. Determine the current in R_3 .

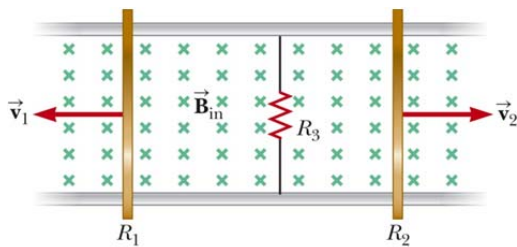


Figure 2