Special Problem 9-2.2

The circuit below forms two surfaces. The surface on the left is a square denoted as $S_1$. The surface on the right is a square denoted as $S_2$. The surface area of each surface is $2 \text{ m}^2$.

The magnetic flux density on surface $S_1$ is:

$$\mathbf{B}_1(\mathbf{r}, t) = 5 t \hat{a}_z \quad \left[ \frac{\text{W}}{\text{m}^2} \right]$$

while the magnetic flux density on surface $S_2$ is

$$\mathbf{B}_2(\mathbf{r}, t) = t \hat{a}_z \quad \left[ \frac{\text{W}}{\text{m}^2} \right]$$

1) Determine the voltages $v_1$ and $v_2$ and currents $i_1$ and $i_2$.

2) Determine the voltage $V_m$ that a voltage meter would read in the following situation: