

### Special Problem 8-3.1

Two slabs of dissimilar **magnetic** material share a common **boundary**, as shown below.

It is known that the magnetic flux density in the **upper** dielectric region is:

$$\mathbf{B}_1(\bar{r}) = 3\mu_0 \hat{a}_x + 6\mu_0 \hat{a}_z$$

In the **lower** region (i.e., region 2), determine (in terms of  $\mu_0$ ):

- 1) the magnetic field
- 2) the magnetic flux density
- 3) the magnetization vector
- 4) the surface current density of the **magnetization** current  $\mathbf{J}_{sm}(\bar{r})$  on the interface for both region 1 and region 2 .

