

Special Problem 7-4.3

There exists a **current density** in free-space:

$$\mathbf{J}(\bar{r}) = \begin{cases} 2 \hat{a}_z & \rho < 1 \text{ m} \\ 0 & 1 \text{ m} < \rho < 2 \text{ m} \\ 2 \hat{a}_z & 2 \text{ m} < \rho < 3 \text{ m} \\ 0 & \rho > 3 \text{ m} \end{cases} \quad [A/m^2]$$

Determine the magnetic flux density $\mathbf{B}(\bar{r})$ created by this current density.