

Reading

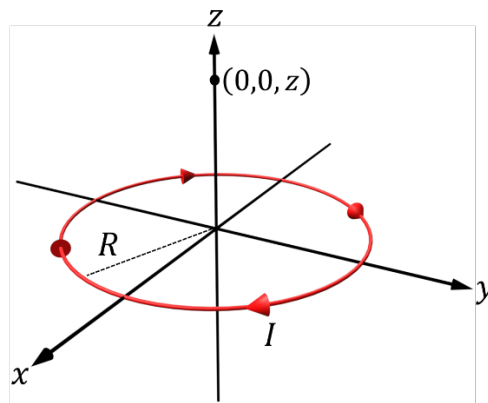
Required Reading

- Chapter 7, pp. 296 – 319 and pp. 326 – 335.

Line Currents

Problem 1 – Line Current

The circular-shaped line current shown in the figure below resides in the xy plane in a medium with relative permeability $\mu_r = 40$. If the circle has a radius of $R = 2.0$ cm and carries a current of $I = 2.4$ A, calculate the magnetic flux density \vec{B} at position $(0,0,z)$ where $z = 0.50$ cm.



Sheet Currents

Problem 2 – Finite Sheet Current

The figure below shows a planar sheet current located in the yz plane that carries a current density $\vec{K} = 8\hat{a}_y$ A/m. The sheet is confined to the space defined by -4 m $< y < 4$ m and -2 m $< z < 2$ m. Calculate the magnetic flux density at $\vec{P} = (1$ cm, 1 cm, 1 cm) in air.

