

Solutions

Each answer shows the steps, then the **result**.

2.1

- the line integral of $\vec{B}$ around a closed loop equals μ_0 times the enclosed current

2.2

- $B = \mu_0 n I = (4\pi \times 10^{-7})(500)(2.0) = 1.3 \times 10^{-3} \text{ T}$

2.3

- when the current has enough symmetry to make B constant and parallel along a chosen loop

3.1 B

3.2 B

3.3

(a)

- $n = \frac{1000}{0.50} = 2000 \text{ m}^{-1}$

(b)

- $B = \mu_0 n I = (4\pi \times 10^{-7})(2000)(3.0) = 7.5 \times 10^{-3} \text{ T}$