

### Answer on Question #71607-Physics-Electromagnetism

Find the magnetizing field H and the magnetic flux density point of B at (a) a 105 mm from a long straight wire carrying a current of 15 A and (b) the center a 2000-turn solenoid which is 0.24m long and bears a current of 1.6A

#### Solution

a)

$$H = \frac{B}{\mu_0} = \frac{\mu_0 I}{2\pi r} = \frac{I}{2\pi r}$$

$$H = \frac{15}{2\pi(0.105)} = 22.7 \frac{A}{m}$$

$$B = \frac{\mu_0 I}{2\pi r}$$

$$H = \frac{(4\pi)15}{2\pi(0.105)10^7} = 28.57 \mu T$$

b)

$$H = nI$$

$$H = \frac{2000}{0.24} 1.6 = 13.33 \frac{A}{m}$$

$$B = \mu_0 H$$

$$B = \frac{(4\pi)}{10^7} \frac{2000}{0.24} 1.6 = 0.0168 T$$

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