

Answer on Question #82002, Physics / Electromagnetism

Question:

A current of I Ampere flows in a circular arc of wire which subtends an angle of $3\pi/2$ radians at its center, whose radius is R . The magnetic induction B at the centre is?

Solution:

For a circle $B_c = \frac{\mu_0 I}{2R}$, respectively for the arc $B = \frac{\mu_0 I}{2R} \times \frac{1.5\pi}{2\pi} = \frac{12 \cdot 3.14 \cdot 10^{-7}}{8R} = \frac{4.7 \cdot 10^{-7}}{R}$ (T).

The answer:

$$B = \frac{4.7 \cdot 10^{-7}}{R} \text{ T.}$$

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