Angle between current element and position in magnetic field at the center of a circular current loop

90

Derivation for expression of differential equation for magnetic field at the center of a circular current loop

- $$dB = \frac{\mu_0 I dl \sin 90}{4\pi r^2}$$
- $$dB = \frac{\mu_0 I dl}{4\pi r^2}$$

Expression of differential equation for magnetic field at the center of a circular current loop

- $$dB = \frac{\mu_0 I dl}{4\pi r^2}$$

Derivation for expression of general particular equation for magnetic field at the centre of circular current loop

- Integrating
- $$B = \int dB = \int \frac{\mu_0 I dl}{r^2}$$
- $$B = \frac{\mu_0 I}{4\pi r^2} l$$
- $$B = \frac{\mu_0 I}{4\pi r^2} 2\pi r$$
- $$B = \frac{\mu_0 I}{2r}$$

Expression of general particular equation for magnetic field at the centre of circular current loop

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

Expression for magnetic field at N circular coils winding over one another

- $$B = \frac{\mu_0 N I}{2r}$$