

35. For $r < a$,

$$B(r) = \frac{\mu_0 i_{\text{enc}}}{2\pi r} = \frac{\mu_0}{2\pi r} \int_0^r J(r) 2\pi r \, dr = \frac{\mu_0}{2\pi} \int_0^r J_0 \left(\frac{r}{a} \right) 2\pi r \, dr = \frac{\mu_0 J_0 r^2}{3a} .$$