

Equation ③ becomes $B = \frac{\mu_0 I x}{4\pi} \left[\frac{y}{x^2 (x^2 + y^2)^{3/2}} \right]_0^a$

Eqn $B = \frac{\mu_0 I x}{4\pi} \left[\frac{2a}{x^2 + a^2} \right]^{1/2}$