

4. The points must be along a line parallel to the wire and a distance r from it, where r satisfies

$$B_{\text{wire}} = \frac{\mu_0 i}{2\pi r} = B_{\text{ext}} ,$$

or

$$r = \frac{\mu_0 i}{2\pi B_{\text{ext}}} = \frac{(1.26 \times 10^{-6} \text{ T}\cdot\text{m/A})(100 \text{ A})}{2\pi(5.0 \times 10^{-3} \text{ T})} = 4.0 \times 10^{-3} \text{ m} .$$