



Currents I_A and I_B produce fields with magnitude:

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

we can take out an positive.

$$\begin{aligned} \text{So, at point 1: } \vec{B} &= \vec{B}_A + \vec{B}_B \\ &= \frac{\mu_0 I_A}{2\pi a} - \frac{\mu_0 I_B}{2\pi(d+a)} \\ &= \frac{\mu_0 I}{2\pi} \left(\frac{1}{a} - \frac{1}{d+a} \right) \\ &= \underline{6.67 \times 10^{-5} \text{ T out}} \end{aligned}$$

$$\begin{aligned} \text{Point 2: } \vec{B} &= \vec{B}_A + \vec{B}_B \\ &= -\frac{\mu_0 I_A}{2\pi(d/2)} - \frac{\mu_0 I_B}{2\pi(d/2)} \\ &= -\frac{2\mu_0 I}{\pi d} \\ &= \underline{-2 \times 10^{-4} \text{ T in}} \end{aligned}$$

Point 3: $\vec{B} = \vec{B}_A + \vec{B}_B$

$$= -\frac{\mu_0 I}{2\pi(d+a)} + \frac{\mu_0 I}{2\pi a}$$
$$= \frac{\mu_0 I}{2\pi} \left(-\frac{1}{(d+a)} + \frac{1}{a} \right)$$
$$= \underline{\underline{-6.67 \times 10^{-5} \text{ T in}}}$$