72. (a) We designate the wire along $y = r_A = 0.100$ m wire A and the wire along $y = r_B = 0.050$ m wire B. Using Eq. 30-6, we have

$$\begin{aligned}\vec{B}_{\text{net}} &= \vec{B}_A + \vec{B}_B \\ &= -\frac{\mu_0\, i_A}{2\pi\, r_A}\,\hat{\text{k}} - \frac{\mu_0\, i_B}{2\pi\, r_B}\,\hat{\text{k}}\end{aligned}$$

which yields $\vec{B}_{\text{net}} = 52.0 \times 10^{-6}\hat{\text{k}}$ T.

(b) This will occur for some value $r_B < y < r_A$ such that

$$\frac{\mu_0\, i_A}{2\pi\, (r_A - y)} = \frac{\mu_0\, i_B}{2\pi\, (y - r_B)} \quad .$$

Solving, we find $y = 13/160 \approx 0.081$ m.

(c) We eliminate the $y < r_B$ possibility due to wire B carrying the larger current. We expect a solution in the region $y > r_A$ where

$$\frac{\mu_0\, i_A}{2\pi\, (y - r_A)} = \frac{\mu_0\, i_B}{2\pi\, (y - r_B)} \quad .$$

Solving, we find $y = 7/40 \approx 0.018$ m.