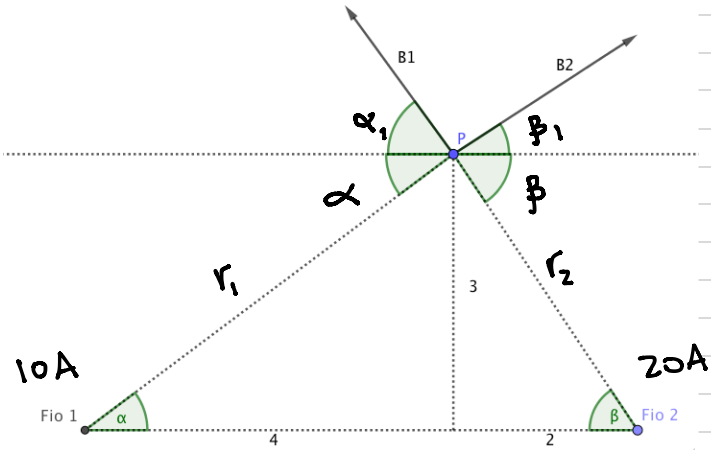

Indução magnética, exemplo:

Calcular o módulo, a direção e o sentido do vetor campo magnético no ponto P no esquema

$\alpha = \arctan \frac{3}{4} \Rightarrow \alpha = 36,9^\circ$; $\alpha_1 = 90 - \alpha \Rightarrow \alpha_1 = 90 - 36,9 \Rightarrow \alpha_1 = 53,1^\circ$

$\beta = \arctan \frac{3}{2} \Rightarrow \beta = 56,3^\circ$; $\beta_1 = 90 - \beta \Rightarrow \beta_1 = 90 - 56,3 \Rightarrow \beta_1 = 33,7^\circ$

$r_1 = \sqrt{3^2 + 4^2} \Rightarrow r_1 = 5\,cm = 5,0 \times 10^{-2}\,m$; $r_2 = \sqrt{3^2 + 2^2} \Rightarrow r_2 = 3,61\,cm = 3,61 \times 10^{-2}\,m$

$$B = \frac{\mu_0 \cdot i}{2\pi R} \Rightarrow B_1 = \frac{4\pi \cdot 10^{-7} \cdot 10}{2\pi \cdot 5,0 \times 10^{-2}} \Rightarrow B_1 = 4,0 \times 10^{-5}\,T$$

$$B_2 = \frac{4\pi \cdot 10^{-7} \cdot 20}{2\pi \cdot 3,61 \cdot 10^{-2}} \Rightarrow B_2 = 11,1 \times 10^{-5}\,T$$

$\vec{B}_{1x} = -4,0 \times 10^{-5} \cdot \cos 53,1^\circ = -2,4 \times 10^{-5}\,T$

$\vec{B}_{1y} = 4,0 \times 10^{-5} \cdot \operatorname{sen} 53,1^\circ = 3,2 \times 10^{-5}\,T$

$\vec{B}_{2x} = 11,1 \times 10^{-5} \cdot \cos 33,7^\circ = 9,23 \times 10^{-5}\,T$

$\vec{B}_{2y} = 11,1 \times 10^{-5} \cdot \operatorname{sen} 33,7^\circ = 6,16 \times 10^{-5}\,T$

$\vec{B}_x = -2,4 \times 10^{-5} + 9,23 \times 10^{-5} \Rightarrow B_x = 6,83 \times 10^{-5}\,T$

$\vec{B}_y = 3,2 \times 10^{-5} + 6,16 \times 10^{-5} \Rightarrow B_y = 9,36 \times 10^{-5}\,T$

$B = \sqrt{6,83^2 + 9,36^2}$

$B = 11,6 \times 10^{-5}\,T$

$\theta = \arctan \frac{9,36}{6,83}$

$\theta = 53,9^\circ$

$\boxed{\vec{B} = 11,6 \times 10^{-5}\,T;\ \theta = 53,9^\circ}$