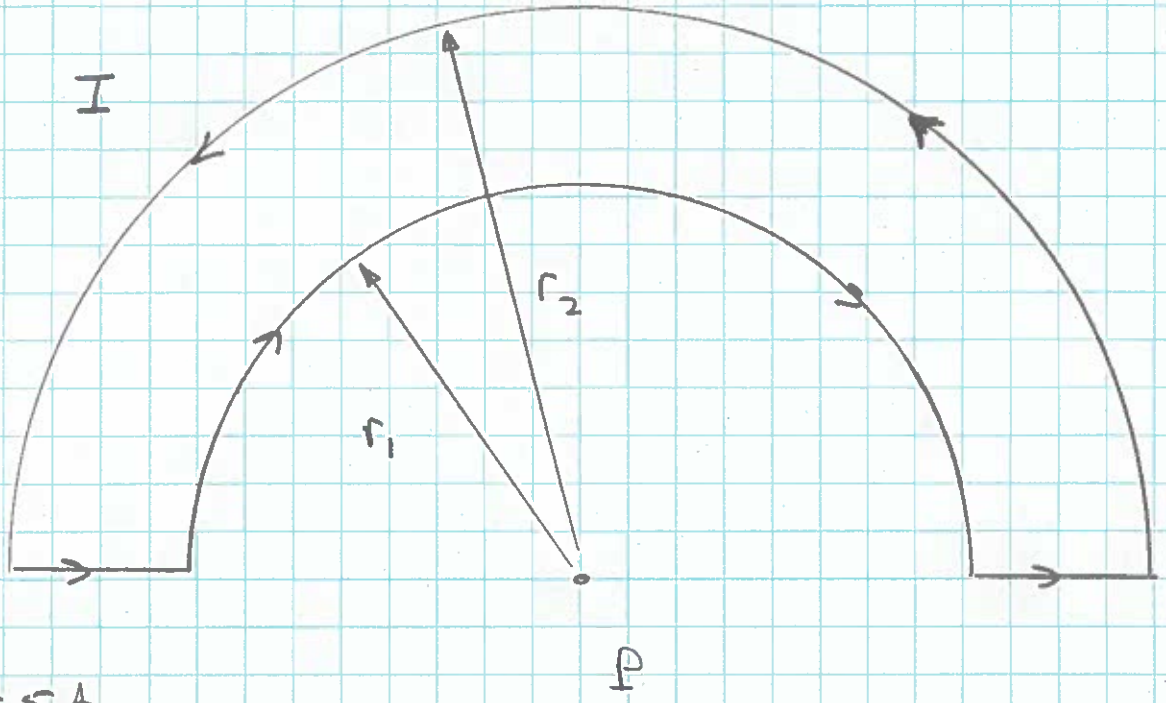

$I = 5\ A$
$r_1 = 1.0\ cm$
$r_2 = 2.0\ cm$

On prob. WB29-7 we showed that the field at the center of a circular arc of angle θ is:

$$B = \frac{\mu_0 I \theta}{4\pi R} = \frac{\mu_0 I}{4R} \quad \text{for semi-circle}$$

Here, the straight segments don't create a field at P

and the smaller arc creates $\vec{B}$ into page and the larger out – take out as positive

$$\text{at P: } \vec{B} = \vec{B}_1 + \vec{B}_2 = \left(-\frac{\mu_0 I}{4 r_1} + \frac{\mu_0 I}{4 r_2} \right)$$

$$= \frac{\mu_0 I}{4} \left(\frac{1}{r_2} - \frac{1}{r_1} \right)$$

$$= -7.854 \times 10^{-5}\ T \quad \text{so field in}$$