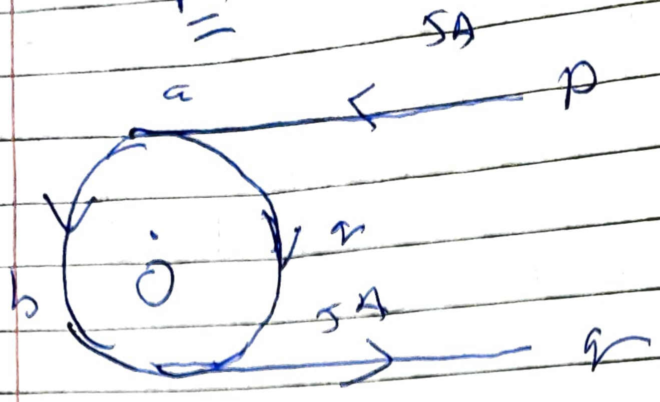
4th July

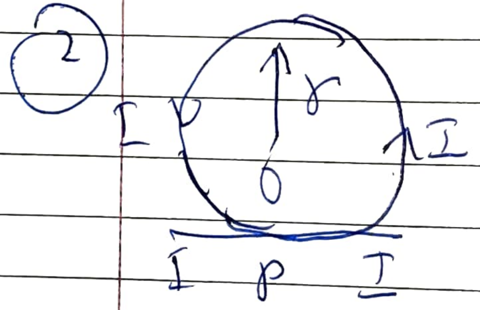
Phy



Magnetic field at point O due to straight conductor pA is

$$B_1 = \frac{1}{2}\left[\frac{\mu_0 I}{2\pi r}\right]$$

$$\frac{4\pi \times 10^{-9} \times 5}{4\pi \times 5 \times 10^{-2}} = 10^{-5} T$$



$$B_1 = \frac{\mu_0}{2\pi} = \frac{1}{R}$$

$$B_2 = \frac{\mu_0 I}{2R}$$

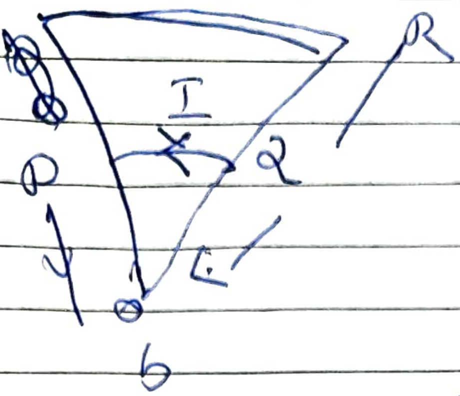
Resultant field at O

$$B = B_2 - B_1$$

$$\frac{\mu_0 I}{2R}$$

$$1 - \frac{1}{R}$$

(3)



Magnetic field due to straight lines will be zero

due to circular arc

$$B = \frac{\mu_0 I \theta}{4\pi R}$$

for $r = b$

$$B_2 = \frac{\mu_0 I \theta}{4\pi b}$$ inside

4)

$$B = \frac{\mu_0 I}{2R}$$

$$\frac{\mu_0 I}{2R}$$

$$B_2 = \frac{\pi b}{2R} \sqrt{3}$$

$$B = \sqrt{B_1^2 + B_2^2}$$

$$\sqrt{\frac{\mu_0}{3R}^2 + \frac{\mu_0}{2R}\sqrt{3}^2}$$

(5) magnetic f at point O

$$\frac{\mu_0 I a^2}{2(a^2+x^2)^{\frac{3}{2}}}$$

loop I

a is radius

Magnetic field at point O due to circular loop

$B_2 = \frac{\mu_0 I a^2}{}$ along axis away