

Ex. 2 G corrected!



Charge on a ring of radius  $r$ , thickness  $dr$  is

$$dQ = \sigma \cdot 2\pi r dr$$

current:

$$dI = \frac{dQ}{T} = \frac{\sigma \cdot 2\pi r \cdot dr}{2\pi/\omega} = \sigma \omega r dr$$

mag. field:

$$dB = \frac{\mu_0 dI}{2r} = \frac{\mu_0 \sigma \omega dr}{2}$$

total:

$$B = \int_0^a \frac{\mu_0 \sigma \omega}{2} dr = \underline{\underline{\frac{\mu_0 \sigma \omega a}{2}}}$$