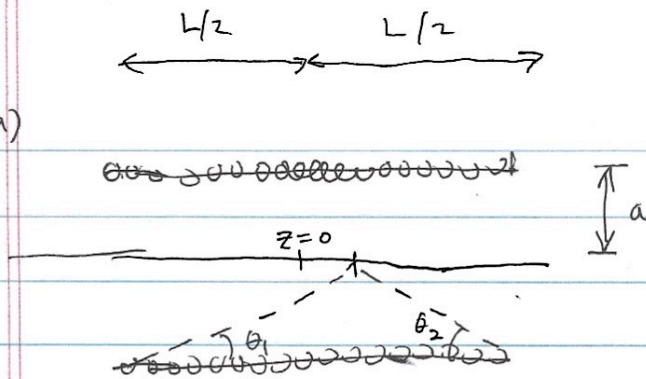


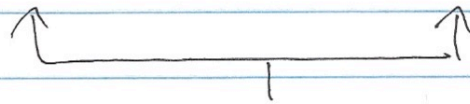
Jackson 5.5(a)



From 5.3 we have $B_z = \frac{\mu_0 N I}{2} [\cos \theta_1 + \cos \theta_2]$

~~Part~~ Exercise 5.4 allows determination of $B_z(\rho, z)$, $B_\rho(\rho, z)$ from B_z and its derivatives alone.

Note that $\cos \theta_1 = \frac{L/2 + z}{\sqrt{(L/2 + z)^2 + a^2}}$, $\cos \theta_2 = \frac{L/2 - z}{\sqrt{(L/2 - z)^2 + a^2}}$



Compute their derivatives with respect to z evaluated at $z=0$.