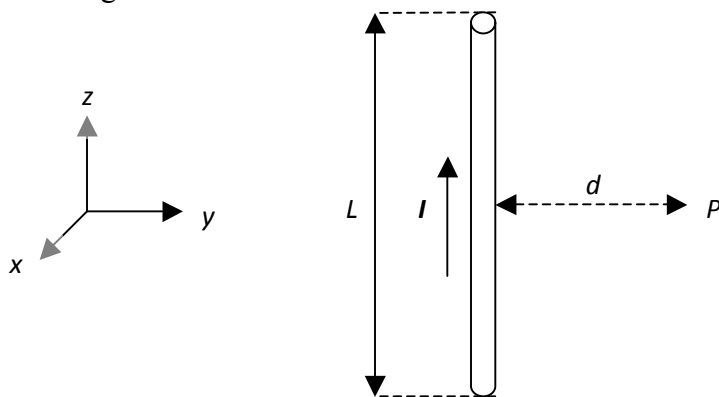


PY212

Quiz 7

Answer the following questions about the magnetic field at a point P a distance d away from the middle of a wire. The wire has finite length L and current I . Please show all work.

- a.) Using the coordinate system shown, draw the vectors $d\hat{l}$ and \hat{r} . What is the direction of the magnetic field?



- b.) Which is more applicable for solving for the magnetic field: *Ampere's Law* or the *Biot-Savart Law*? Please explain.

- c.) Solve for the magnetic field at the point P . Note that $\int \frac{dx}{(a^2 + x^2)^{3/2}} = \frac{x}{a^2 \sqrt{a^2 + x^2}}$.