ELECTROMAGNETISM I

POP QUIZ

collection from weeks 1-6.

PH 631 Fall 2015

Instructor Ethan Minot

POP QUIZ PH631 DAY 1

a) Show that $\Phi(\vec{r}) = \frac{q}{4\pi\varepsilon_0 r}$ is a ~~valid~~ possible solution to the Poisson eqn in regions where $\rho(\vec{r}) = 0$.

b) Show that $\Phi(\vec{r}) = V_0 \sin kx\, e^{-kz}$ is also a possible solution to the Poisson eqn in regions where $\rho(\vec{r}) = 0$.

POP QUIZ PH 631 DAY 2

Name _____

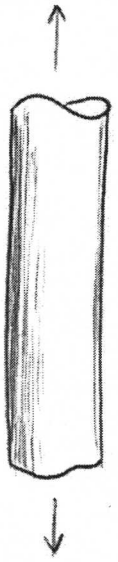
This question is closed book. Don't look at your notes. But do talk to your classmates.

a) Write down the Poisson Eqn

b) Derive Gauss's Law

POP QUIZ PH631 DAY 3

Name: _____



Consider an infinitely long rod (circular cross-section) that carries uniform charge density ρ_0.

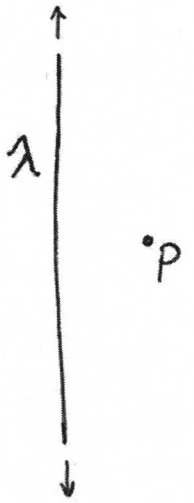
a) What symmetries does $\rho(\vec{r})$ have?

b) Draw an $\vec{E}$-field that has all the same symmetries as $\rho(\vec{r})$.

c) Draw an $\vec{E}$-field that lacks one of the symmetries.

POP QUIZ PH 631 DAY 4

Name _____



An infinitely long line of charge is uniformly distributed such that each segment of length L has charge λL.

Use a Green's function integral to find the potential at point P.