What do you expect to happen to the field as you get really far from the rod?

$$E_x = \frac{\lambda}{4\pi\varepsilon_0} \frac{L}{x\sqrt{x^2 + L^2}}$$

A. E_x goes to 0.
B. E_x begins to look like a point charge.
C. E_x goes to ∞.
D. More than one of these is true.
E. I can't tell what should happen to E_x.

Taylor Series?

A. I remember those and am comfortable with them.
B. I remember them, but it might take a little while to get comfortable.
C. I've definitely worked with them before, but I don't recall them.
D. I have never seen them.

$$E_x = \frac{\lambda}{4\pi\varepsilon_0} \frac{L}{x\sqrt{x^2 + L^2}}$$

If we are *far from the rod*, what is the small parameter in our Taylor expansion?

A. x
B. L
C. x/L
D. L/x
E. More than one of these

$$E_x = \frac{\lambda}{4\pi\varepsilon_0} \frac{L}{x\sqrt{x^2 + L^2}}$$

If we are *very close* to the rod, what is the small parameter in our Taylor expansion?

A. x
B. L
C. x/L
D. L/x
E. More than one of these

The model we developed for the motion of the charged particle near the charged disk (on the center axis) is represented by this *nonlinear* differential equation:

$$\ddot{x} = C\left[1 - \frac{1}{(x^2 + R^2)^{1/2}}\right]$$

You decide to expand this expression for small parameter is x/R, under what conditions is any solution appropriate?

A. When the disk is very large
B. When the disk is very small
C. When the particle is far from the disk
D. When the particle is near the disk
E. More than one of these