1. **Exercise 21.42.** (a) Use symmetry (b) Superpose surviving components according to the point charge formula \( \vec{E} = \frac{kQ}{r^2} \hat{r} \).

2. **Problem 21.74.** (b) Draw FBD. It should have four forces: \( F_T, F_g, \) and two \( F_E \): one from the external field, the other from the presence of the neighbor charge. Solve for \( \Sigma F_y = 0 \) and \( \Sigma F_x = 0 \).

3. **Exercise 21.51.** (a) \( dE_x = \frac{kqQ}{h^2} \cdot \cos \alpha \) \( E_x = \int_0^{2\pi} dE_x \).
(b) \( F_x = qE \).

4. **Problem 21.65.** (a) Draw FBD. Solve \( \Sigma F_x = 0 \) and \( \Sigma F_y = 0 \).

5. **Problem 21.86.** (a) Consider mirror symmetric elements of charge on either side of the y-axis and evaluate their resultant \( dE \) at the origin. Integrate from \( 0 \) to \( \pi/2 \) to obtain the answer.
   **Note:** \( k = \frac{1}{4\pi\varepsilon_0} \).

6. **Exercise 21.31.** Neglect gravity. This becomes a 2D projectile motion problem with one external force, \( F_E \), in the \( +\hat{y} \) direction. Address \( x \)- and \( y \)-kinematic equations. Example:
   \( \vec{v}_y = v_{y0} + a_y t \)
   \( \vec{y} = y_0 + v_{y0} t + \frac{1}{2} a_y t^2 \), etc. in which \( a_y = F_E/m \), and \( \vec{F}_E = q \vec{E} \).

7. **Problem 21.91.** (a) Use the result of Ex. 21.51, with \( dQ = \sigma \cdot dA \), with \( dA = 2\pi r dr \). The band thickness. Then integrate from \( r = R_1 \) to \( r = R_2 \).
(b) Do small \( x \) asymptotics and prove SHM.