1. Find the electric field in the $xy$-plane for the following charge configuration: a charge $+q$ located at $(0, 0, a)$, and a charge $-q$ located at $(0, 0, -a)$, where $q > 0$. Explain each step, (e.g. “Using the principle of superposition...”), and use symmetry to make your work easier.

2. An array of $n$ very small balls with charge $q$ and spacing $a$ lie along the $y$-axis, with the central ball located at the origin (and $n$ is an odd number). Find the electric field along the $z$-axis. What is the field in the limit $n \to \infty$? If this sum converges, evaluate it. You may need to consult one of the many math references in the library, or some other means (reference your source).

3. Tipler 18-32.

4. Tipler 18-42.