11. **Griffiths, p. 151, Prob. 3.27. Obtain** an **Approximate Electric Potential,** $V(\mathbf{r})$, **At** a **Large Distance,** $r \gg a$, **From** a Distribution Of **Charges, Where** the **Multipole Expansion** Of $V(\mathbf{r})$ **Includes Only** the **First Two Terms,** the **Monopole And** the **Dipole** Terms, **Where** $V(\mathbf{r}) \approx V_{\text{mon}}(\mathbf{r}) + V_{\text{dip}}(\mathbf{r})$, **And** $V_{\text{mon}}(\mathbf{r}) = \frac{1}{4\pi\varepsilon_0}\frac{Q}{r}$, $V_{\text{dip}}(\mathbf{r}) = \frac{1}{4\pi\varepsilon_0}\frac{\mathbf{p}\cdot\hat{\mathbf{r}}}{r^2}$, **And** Where $Q = \sum_{i=1}^{n} q_i$, **And** $\mathbf{p} = \sum_{i=1}^{n} q_i \mathbf{r}_i'$. Given the Value of the Charges, q_i, and the Positions of the Charges, $\mathbf{r}_i'$, the Monopole and Dipole

Terms can be Calculated. **Write Down the Approximate Electric Potential Result In Spherical Coordinates,** (r,θ,ϕ), **And** the **Parameters,** q, a, ε_0.

Note that the Following Pages of Problems (referred to above) are Copied from Griffiths (for your convenience).