Surface Potential Is the Same. **Next,** Consider the First Few Legendre Polynomials, $P_0(\cos\theta)=1$, $P_1(\cos\theta)=\cos\theta$, $P_2(\cos\theta)=\left(3\cos^2\theta-1\right)/2$, And $P_3(\cos\theta)=\left(5\cos^3\theta-3\cos\theta\right)/2$, And **Re-write** the **Surface Potential** Only **In Terms Of** a **Specific Sum,** Finding the Coefficients C_l, **Of Various Legendre Polynomials, As** $V_0=k\left(C_0P_0+C_1P_1+...\right)$. **Finally, By Imposing** the **Boundary Condition For** the **Surface Potential,** $V(R,\theta)=V_0=k\cos 3\theta=k\left(C_0P_0+C_1P_1+...\right)$, Explicitly Represented Using Legendre Polynomials, **Using Your General Potential Sum Solution,** $V(r,\theta)$, **At** $r=R$, You Should Then Be Able To Successfully **Project Out** the **Coefficients,** A_l, B_l, **By Integrating** This Surface Boundary Condition Constraint, **Using** the **Orthonormality Relation** Of the Legendre Polynomials, **As** $\frac{2l+1}{2}\int_0^{\pi}V_0(\theta)P_l(\cos\theta)\sin\theta d\theta$. **Write Down** the **Electrostatic Exterior,** $r>R$, **Potential Solution,** $V(r,\theta)$, **In Terms Of Specific Legendre Polynomials,** $P_l(\cos\theta)$, the **Given Parameters,** k, R, **And** the **Coordinates,** r,θ.