PHYSICS 231 – CHAPTER 23: ELECTRIC POTENTIAL

Potential energy for two point charges:

\[ U = \frac{1}{4\pi \epsilon_0} \frac{q_1 q_2}{r} \]

Potential:

\[ V = \frac{U}{q} \]

Potential difference:

\[ V_a - V_b = \int_{a}^{b} \vec{E} \cdot d\vec{l} \]

Electric field:

\[ \vec{E} = -\vec{\nabla}V = -\frac{\partial V}{\partial x} \hat{i} - \frac{\partial V}{\partial y} \hat{j} - \frac{\partial V}{\partial z} \hat{k} \]