

Electric Potential Energy

1. Law of Gravity

$$\vec{F}_g = \frac{Gm_1m_2}{r^2} \hat{r}$$

2. Gravitational Field

$$\vec{g} = \frac{\vec{F}_g}{m_o}$$

3. Gravitational Potential Energy

$$U_g = -\frac{Gm_1m_2}{r}$$

4. Gravitational Force is a conservative force.

$$w_g = \int_a^b \vec{F}_g \cdot d\vec{\ell} \text{ Path Independent}$$

$$w_g = \oint \vec{F}_g \cdot d\vec{\ell} = 0$$

$$w_g = -\Delta U_g$$

1. Coulomb's Law

$$\vec{F}_E = \frac{kq_1q_2}{r^2} \hat{r}$$

2. Electric Field

$$\vec{E} = \frac{\vec{F}_E}{q_o}$$

3. Electric Potential Energy

$$U_E = \frac{kq_1q_2}{r}$$

4. Electric Force is a conservative force.

$$w_E = \int_a^b \vec{F}_E \cdot d\vec{\ell} \text{ Path Independent}$$

$$w_E = \oint \vec{F}_E \cdot d\vec{\ell} = 0$$

$$w_E = -\Delta U_E$$