Formula sheet - Phys 272 Exam #1 - February 19, 2009

$$\vec{F}_{12} = \frac{kq_1 q_2}{r_{12}^2}\hat{r}_{12}$$

$$\vec{E} = \frac{\vec{F}}{q}\,,\quad \vec{E}_P = \sum_i \vec{E}_{iP}$$

$$\vec{p} = q\vec{L}\,,\quad \vec{\tau} = \vec{p}\times\vec{E}\,,\quad U = -\vec{p}\cdot\vec{E}$$

$$\phi = \int_{surface} \vec{E}\cdot\hat{n}dA\,,\quad \oint \vec{E}\cdot\hat{n}dA = \frac{Q_{enclosed}}{\varepsilon_O}$$

$$\Delta V = V_b - V_a = -\int_a^b \vec{E}\cdot d\vec{l}$$

$$V = \frac{kq}{r}\,,\quad U = qV\,,\quad V = \sum_i \frac{kq_i}{r_i}$$

$$k = 9\times10^9\,\frac{N\cdot m^2}{C^2},\ \varepsilon_0 = 8.85\times10^{-12}\,\frac{C^2}{N\cdot m^2},\ k = \frac{1}{4\pi\varepsilon_0}$$