



$$\vec{E} = \int d\vec{E} = \int \frac{k d\mathcal{Q}}{r^2} \hat{r} = \int_0^R \int_0^{2\pi} k \frac{r' d\phi' dr'}{|\vec{r} - \vec{r}'|^2} \frac{(\vec{r} - \vec{r}')}{|\vec{r} - \vec{r}'|}$$