

In the equation

$$V(s, \phi, z) = \frac{1}{4\pi\epsilon_0} \frac{Q}{2\pi R} \int_0^{2\pi} \frac{R d\phi'}{\sqrt{s^2 + R^2 - 2Rs \cos(\phi - \phi') + z^2}}$$

Which symbols are constants, which are variables, and which are parameters?

Solution While you are doing the integral, ϕ' is the only variable. The position where you are evaluating the potential, parameterized by s , ϕ , and z , is a constant.

AFTER you have done the integral, then ϕ' is gone and s , ϕ , and z become variables. By doing the problem in terms of s , ϕ , and z , you have actually solved an (infinity)³ number of problems, all at once. Equations are much more useful than numbers with units!