



charge Q , uniform, $\lambda = \text{const.}$

dg produces a potential at P :

$$dV = \frac{K dg}{r}$$

So, the total potential at P is:

$$V = \int_Q dV = \int_Q \frac{K dg}{r}$$

all dg are the same distance from P , $r = R = \text{const.}$

So

$$V = \frac{K}{R} \int_Q dg = \frac{KQ}{R}$$
