

We derived the electric potential outside ($r > R$) the charged shell to be

$$V(r) = \frac{1}{4\pi\epsilon_0} \frac{q}{r}$$

What is it for $r < R$?

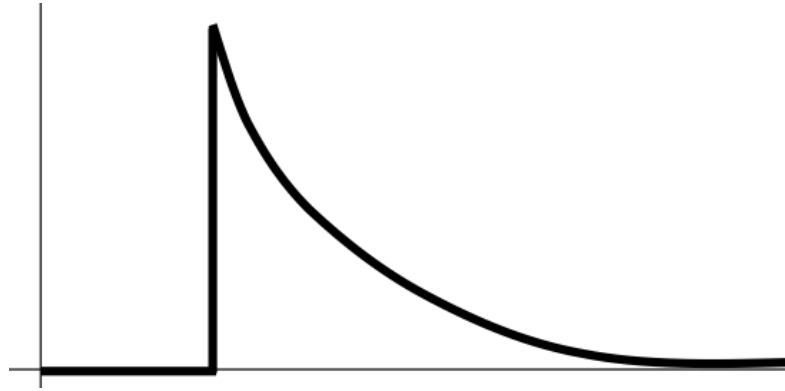
- A. Zero
- B. Constant
- C. It changes but I don't know how yet
- D. Something else

EXAM 1 INFORMATION

- Exam 1 on Wednesday, October 4th (A149 PSS)
 - Across from FRIB (Wilson side)
- 7pm-9pm
 - Arrive on time!
- I will provide a formula sheet (posted on Piazza already)
- You can bring one-side of a sheet of paper with your own notes.
- 4 questions - True/False, Essay, Graphing, Calculations

WHAT'S ON EXAM 1?

- Identify whether conceptual statements about \mathbf{E} , V , ρ , and/or numerical integration are true or false.
- Sketch and discuss delta functions in relation to charge density, ρ
- Calculate the electric field, \mathbf{E} , inside and outside a continuous distribution of charge and sketch the results
- Calculate the electric potential, V , for a specific charge distribution and discuss what happens in limiting cases



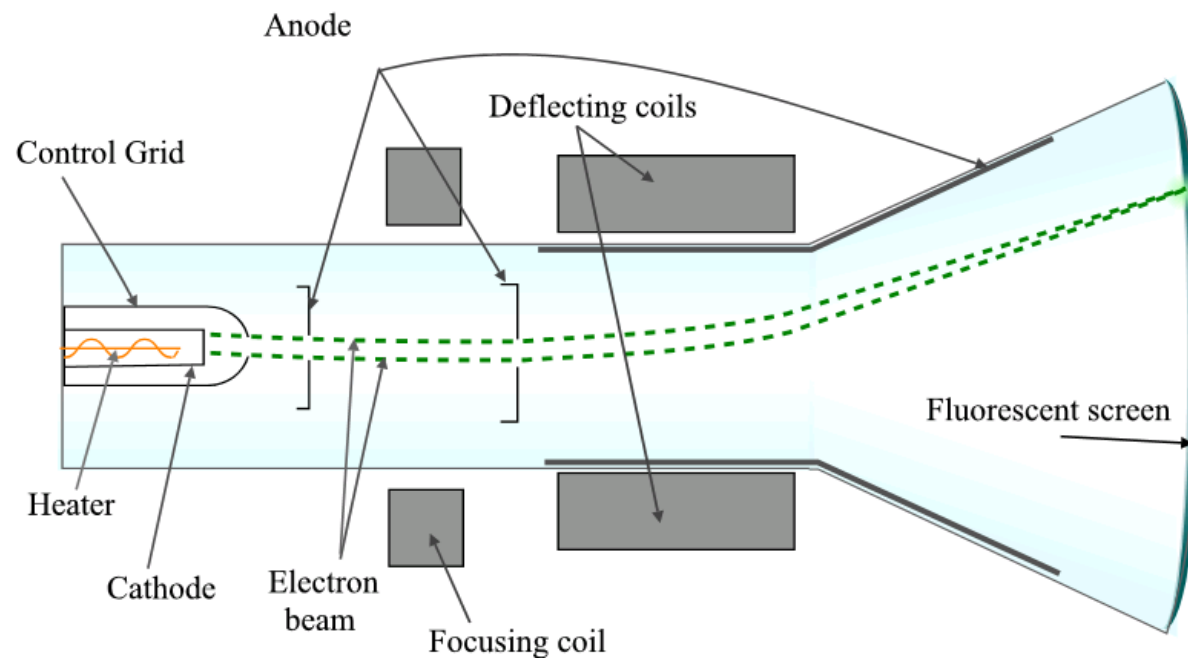
Could this be a plot of $|\mathbf{E}(r)|$? Or $V(r)$? (for SOME physical situation?)

- A. Could be $E(r)$, or $V(r)$
- B. Could be $E(r)$, but can't be $V(r)$
- C. Can't be $E(r)$, could be $V(r)$
- D. Can't be either
- E. ???

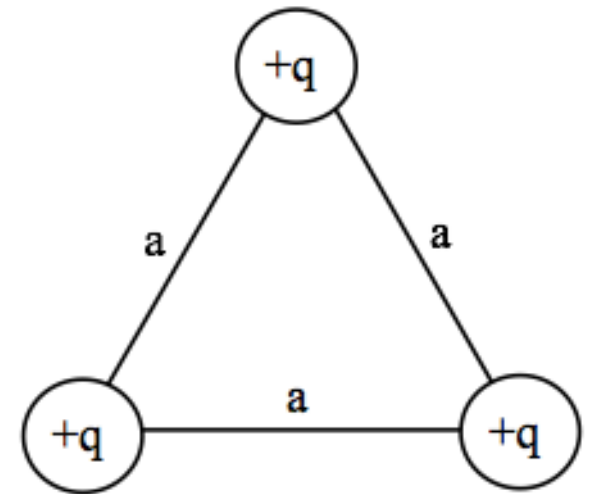
We usually choose $V(r \rightarrow \infty) \equiv 0$ when calculating the potential of a point charge to be $V(r) = +kq/r$. How does the potential $V(r)$ change if we choose our reference point to be $V(R) = 0$ where R is close to $+q$.

- A. $V(r)$ higher than it was before
- B. $V(r)$ is lower than it was before
- C. $V(r)$ doesn't change (V is independent of choice of reference)

ELECTROSTATIC POTENTIAL ENERGY

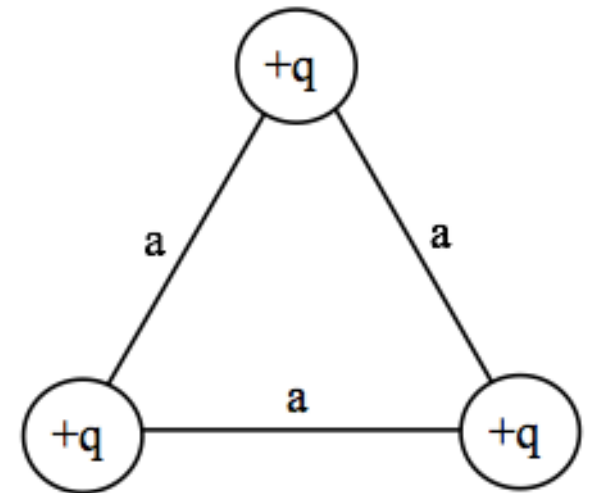


Three identical charges $+q$ sit on an equilateral triangle. What would be the final KE of the top charge if you released it (keeping the other two fixed)?



- A. $\frac{1}{4\pi\epsilon_0} \frac{q^2}{a}$
- B. $\frac{1}{4\pi\epsilon_0} \frac{2q^2}{3a}$
- C. $\frac{1}{4\pi\epsilon_0} \frac{2q^2}{a}$
- D. $\frac{1}{4\pi\epsilon_0} \frac{3q^2}{a}$
- E. Other

Three identical charges $+q$ sit on an equilateral triangle. What would be the final KE of the top charge if you released *all three*?



- A. $\frac{1}{4\pi\epsilon_0} \frac{q^2}{a}$
- B. $\frac{1}{4\pi\epsilon_0} \frac{2q^2}{3a}$
- C. $\frac{1}{4\pi\epsilon_0} \frac{2q^2}{a}$
- D. $\frac{1}{4\pi\epsilon_0} \frac{3q^2}{a}$
- E. Other