

Workbook



Table of Contents

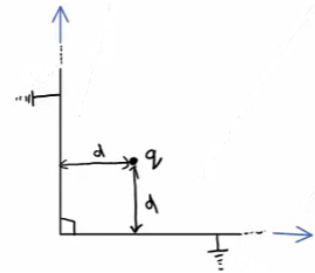
Method Of Images	2
Method Of Images	2

Method Of Images

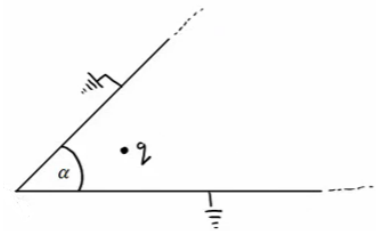
Method Of Images

Questions

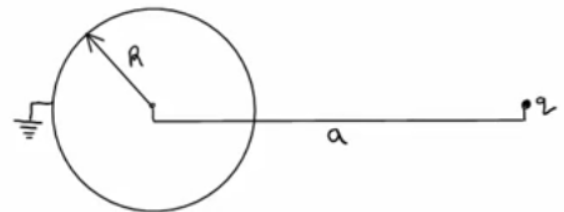
- 1) Two grounded infinite planes are placed at right angles. A charge q is placed a distance d from each plane. Calculate the potential.



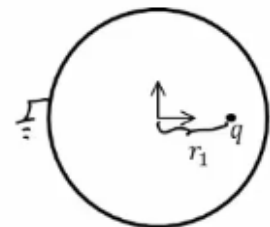
- 2) Two grounded infinite planes are placed at an angle α relative to one another. A charge q is placed a distance d from each plane. Calculate the potential.



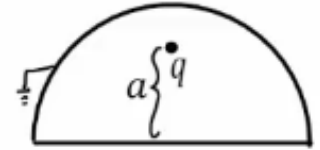
- 3) A charge q is placed a distance a away from the center of a grounded sphere of radius R , where $a > R$. Calculate the potential.



- 4) A charge q is placed a distance r_1 away from the center of the sphere of radius R , where $r_1 < R$. Calculate the potential.



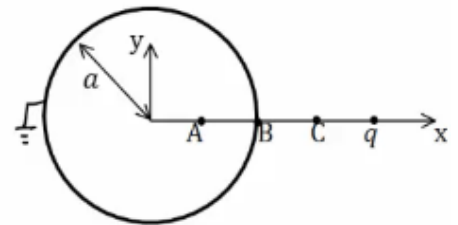
- 5) A point charge q is placed inside a grounded half sphere, of radius R . The charge is located at a height a above the center of the sphere. What is the potential?



- 6) A charge q is placed along the x -axis a distance of $2a$ from the center of a grounded spherical shell of radius a .

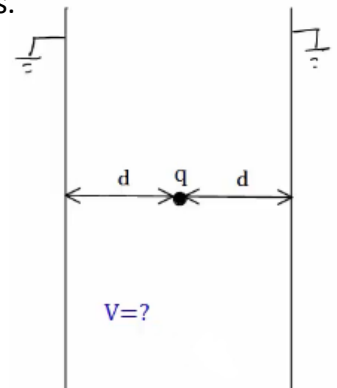
Points A, B and C are also along the x -axis such that $x_A = \frac{a}{2}$, $x_B = a$, $x_C = \frac{3a}{2}$.

- What is the potential at points A, B and C?
- What is the surface charge distribution at B?
- Calculate the force acting on q .
- What is the energy required to build the system?



- 7) A charge q is placed a distance d away from two grounded infinite planes.

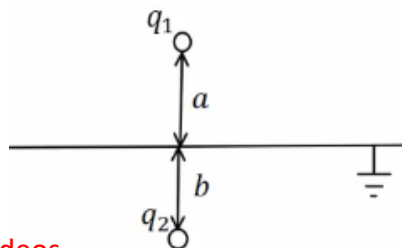
- Calculate the potential in the region between the two planes.
- What is the energy required to build the system?
- What is the energy required to bring charge q from infinity?



- 8) Charge q_1 is located a distance a above an infinite grounded plane.

Charge q_2 is located a distance b below the plane.

- What is the electric field and potential throughout?
- What is the charge distribution on the plane, and what is the total charge on the plane?



*For the solutions go see the videos