King Saud University – Muzahimiyah Branch

Faculty of Information Technology and Computer Sciences

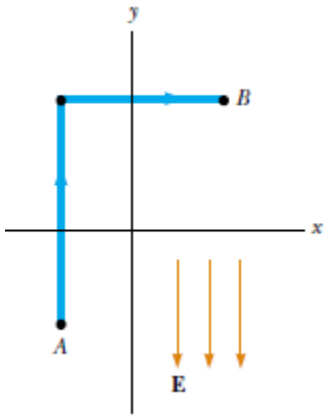
Home Work (4) Potential Difference and Potential Energy

Due Date : Wednesday 3/12/2014

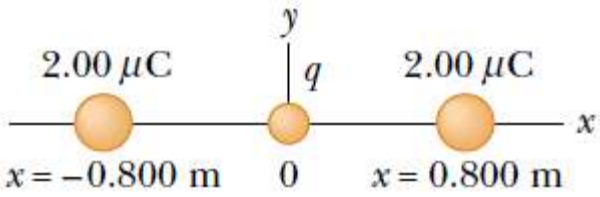
Hand solution to Teaching Assistant: Eng. Mohammed Ashraf

Question 1:
The difference in potential between the accelerating plates in the electron gun of a TV picture tube is about 25000 V. If the distance between these plates is 1.50 cm, what is the magnitude of the uniform electric field in this region?

Question 2:
A uniform electric field of magnitude 325 V/m is directed in the negative y direction in Figure below. The coordinates of point A are (-0.200, -0.300) m, and those of point B are (0.400, 0.500) m. Calculate the potential difference VB - VA, using the path shown.



Question 3:
Given two 2.00 μC charges, as shown in Figure below, and a positive test charge q = 1.28 x 10^{-18} C at the origin, (a) what is the net force exerted by the two 2.00 μC charges on the test charge q? (b) What is the electric field at the origin due to the two 2.00 μC charges? (c) What is the electric potential at the origin due to the two 2.00 μC charges?



Question 4:
Two point charges, Q1 = 5.00 nC and Q2 = -3.00 nC, are separated by 35.0 cm. (a) What is the potential energy of the pair? What is the significance of the algebraic sign of your answer? (b) What is the electric potential at a point midway between the charges?