

Name: _____ Section: _____ Score: _____/20

1. As shown in Figure 1 there is a uniform electric field \mathbf{E} around the origin due to a large uniformly charged plane, which is perpendicular to the sheet of the quiz paper.

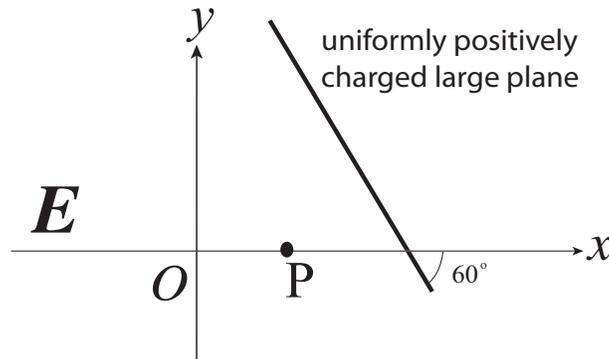


Figure 1:

(a) $|\mathbf{E}| = 5.0 \times 10^3 \text{ N/C}$ at the origin. We place a charge $q = 2.0 \mu\text{C}$ at the origin. Find the force (i.e., its x and y components). [5]

(b) If this charge is moved to point P whose coordinate vector is $(2.0, 0) \text{ m}$. What is the total electric field at the origin? [5]

2. Electric field lines due to more than 10 charges on a plane are depicted in Fig. 2.

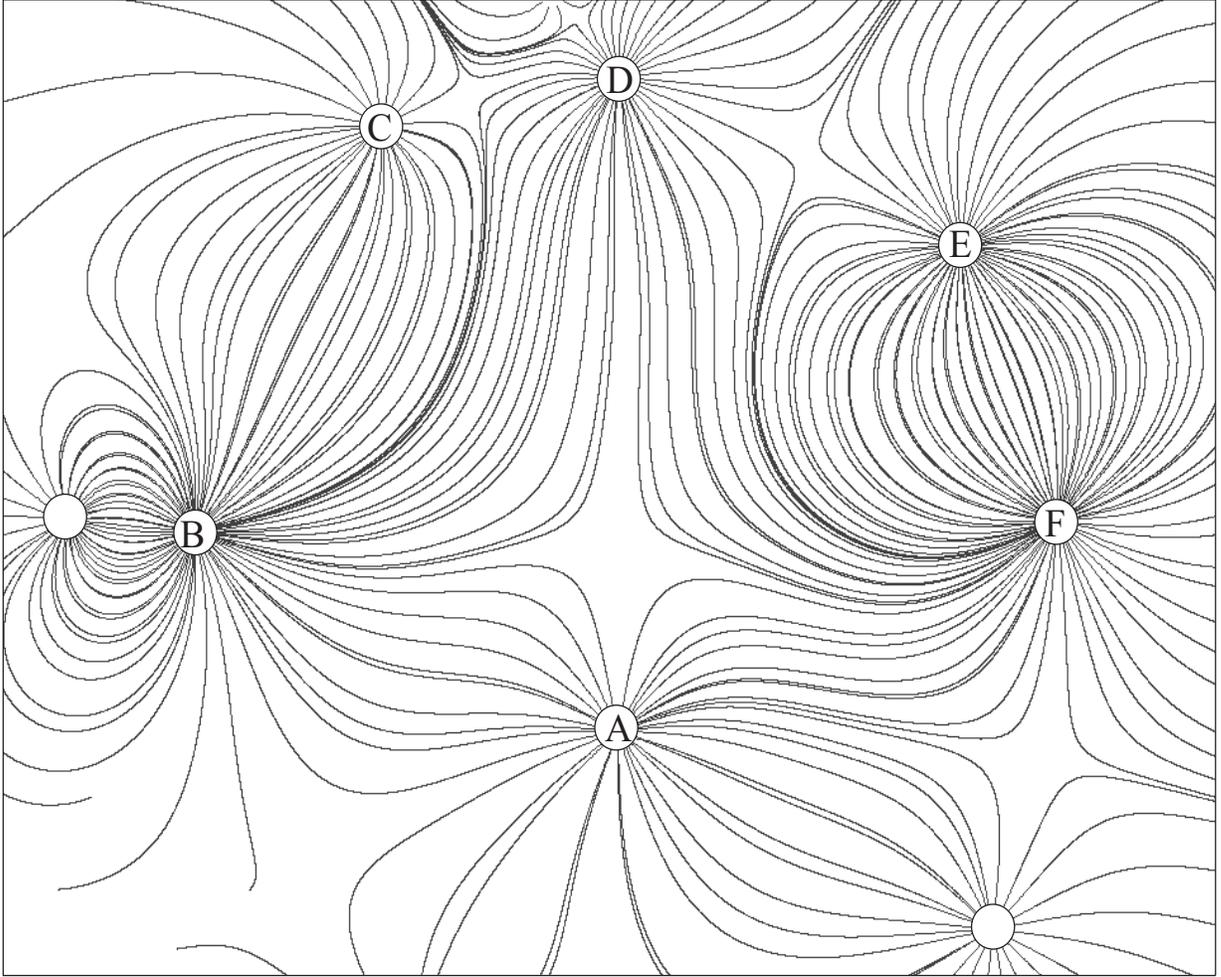


Figure 2:

(a) Suppose charge A is positive. Give all the negative charges among B-F. [4]

(b) There are several points where the electric field vanishes. Mark any three of them with x. [4]

(c) If only the charge E is allowed to move, initially in which direction does it move? Draw an arrow indicating the direction in the figure at the initial location of charge E. [3]