Halliday/Resnick/Walker
Fundamentals of Physics 8th edition

Classroom Response System Questions

Chapter 22 Electric Fields

Interactive Lecture Questions

22.4.3. At a distance of one centimeter from an electron, the electric field strength has a value *E*. At what distance is the electric field strength equal to *E*/2?

a) 0.5 cm

b) 1.4 cm

c) 2.0 cm

d) 3.2 cm

e) 4.0 cm

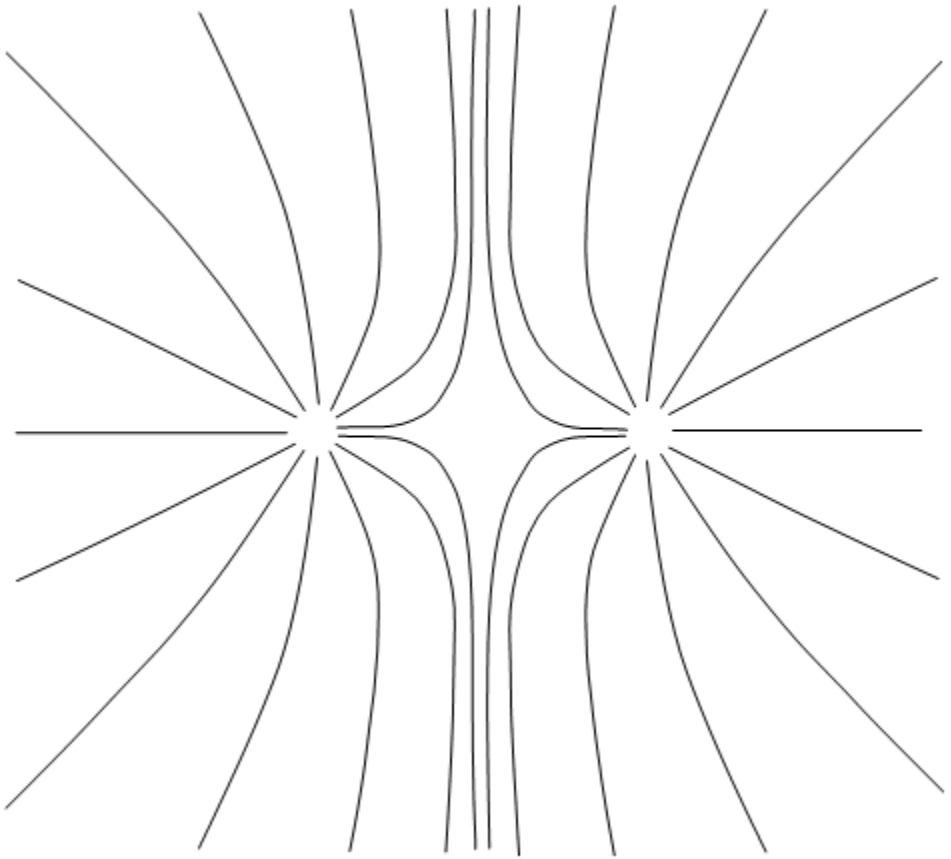
22.4.4. Consider the electric field lines shown in the drawing. Which of the following statements correctly describes this situation?

a) The electric field is due to a positively charged particle.

b) The electric field is due to a negatively charged particle.

c) The electric field is due to a positively charged particle and a negatively charged particle.

d) The electric field is due to particles that are both charged either positively or negatively.



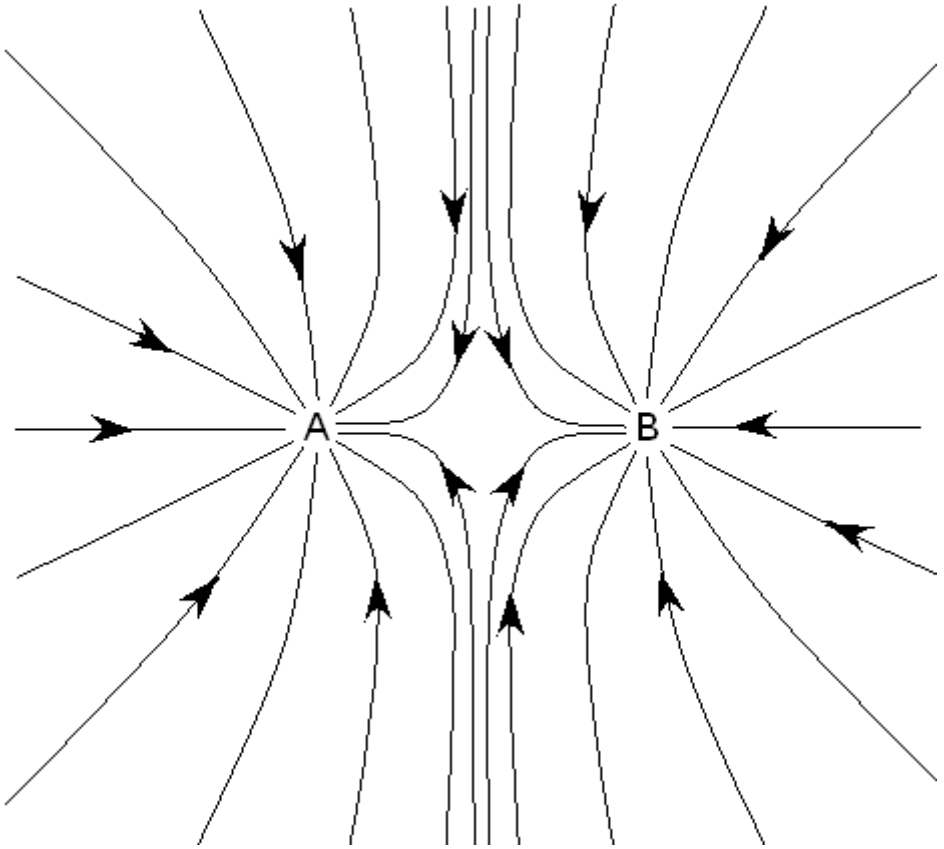
22.4.5. Consider the electric field lines shown in the drawing. Which of the following statements correctly describes this situation?

a) A and B are both positively charged particles.

b) A and B are both negatively charged particles.

c) A is a positively charged particle and B is a negatively charged particle.

d) B is a positively charged particle and A is a negatively charged particle.



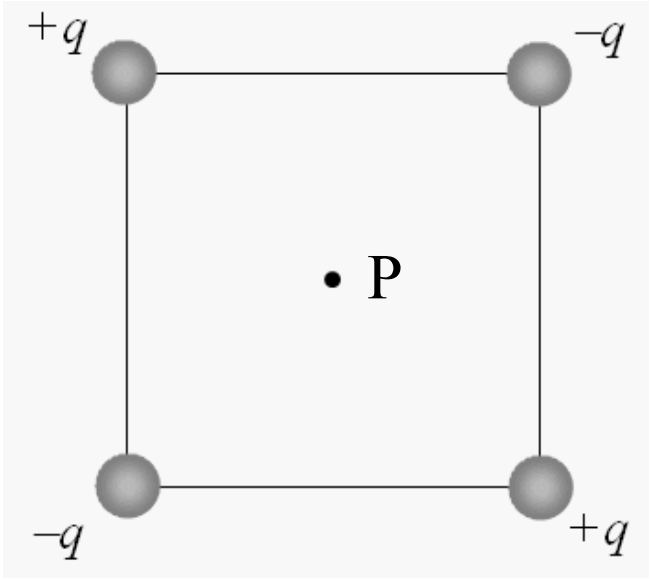
22.4.6. Four charges are located on the corners of a square as shown in the drawing. What is the direction of the net electric field at the point labeled P?

a) toward the upper left corner of the square

b) toward the middle of the right side of the square

c) toward the middle of the bottom side of the square

d) toward the lower right corner of the square



e) There is no direction. The electric field at P is zero N/C.

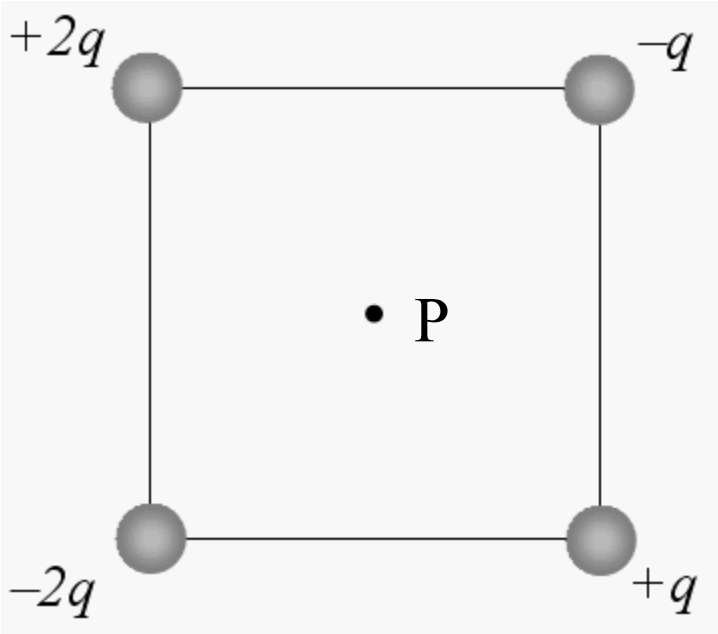
22.4.7. Four charges are located on the corners of a square as shown in the drawing. What is the direction of the net electric field at the point labeled P?

a) toward the upper left corner of the square

b) toward the middle of the right side of the square

c) toward the middle of the bottom side of the square

d) toward the lower right corner of the square



e) There is no direction. The electric field at P is zero N/C.

22.6.1. Consider a line of charge of length L that has a linear charge density λ that is located on the x axis beginning at $x = d$. Which one of the following expressions allows one to calculate the electric field at the origin?

a) $E = \frac{\lambda}{4\pi\varepsilon_0}\int_d^L \frac{dx}{x^2}$

b) $E = \frac{\lambda}{4\pi\varepsilon_0}\int_0^L x^2 dx$

c) $E = \frac{\lambda}{4\pi\varepsilon_0}\int_d^{d+L} \frac{dx}{x^2}$

d) $E = \frac{\lambda}{4\pi\varepsilon_0}\int_0^L \frac{dx}{x}$

e) $E = \frac{\lambda}{4\pi\varepsilon_0}\int_0^{d+L} \frac{dx}{x}$

22.8.2. Consider the drawing, where the solid lines with arrows represent the electric field due to the charged object. An electron is placed at the point P and released from rest. Which of the following vectors represents the direction of the force, if any, on the electron?

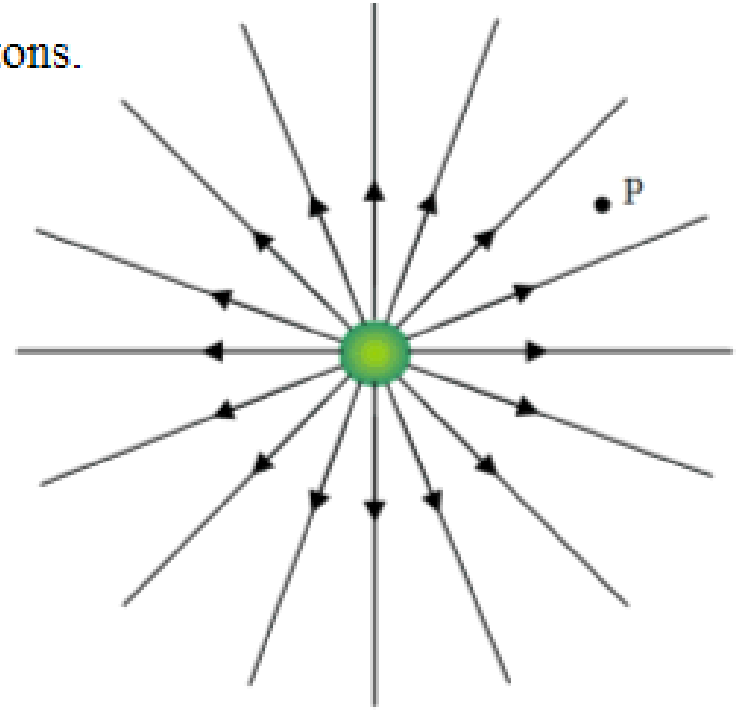
a) The electric force will be zero newtons.

b) 

c) 

d) 

e) 



22.8.6. A positively charged object is located to the left of a negatively charged object as shown. Electric field lines are shown connecting the two objects. The five points on the electric field lines are labeled A, B, C, D, and E. At which one of these points would a test charge experience the largest force?

a) A

b) B

c) C

d) D

e) E