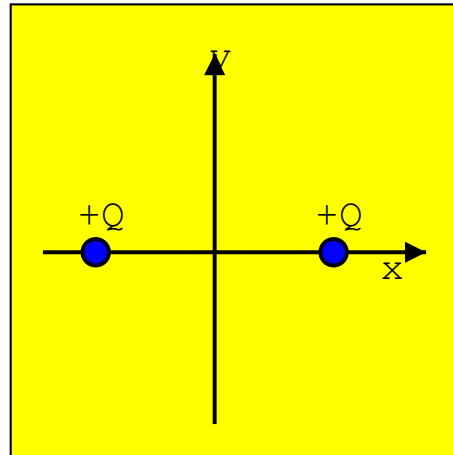


## Electric Field Diagram 1 - Two Positive Charges

Two equal positive point charges  $+Q$  lie on the x-axis at  $x = a$  and  $x = -a$ , respectively. Answer the following questions about the electric field they generate.

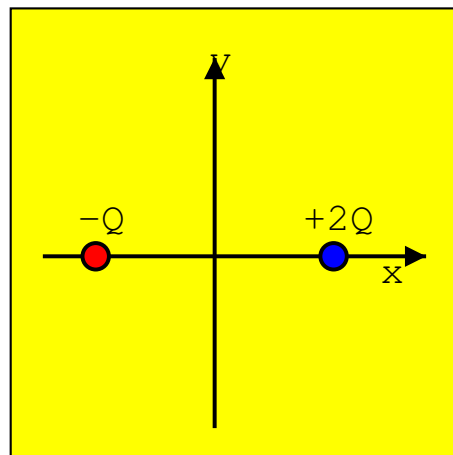
- a) Does this charge distribution have a symmetry? If so, describe it.
- b) Calculate the electric field at the origin.
- c) Calculate the electric field at  $x = a/2$ ,  $y = 0$ .
- d) Calculate the electric field at  $x = 2a$ ,  $y = 0$ .
- e) Calculate the electric field at  $x = 0$ ,  $y = a$ .
- f) Sketch the electric field using the conventions we discussed in class, with six E-field lines per charge  $Q$ .



## Electric Field Diagram 2

Two point charges are located on the x-axis. A positive charge  $+2Q$  is at  $x = a$  and a negative charge  $-Q$  is at  $x = -a$ . Answer the following questions about the electric field they generate.

- a) Does this charge distribution have a symmetry? If so, describe it.
- b) Calculate the electric field at the origin.
- c) Calculate the electric field at  $x = a/2$ ,  $y = 0$ .



- d) Calculate the electric field at  $x = 2a$ ,  $y = 0$ .
- e) Calculate the electric field at  $x = 0$ ,  $y = a$ .
- f) Sketch the electric field using the conventions we discussed in class, with six E-field lines per charge  $Q$ .