Lab 1 WORK SHEET

1. Conversion of a vector from Cartesian Coordinates to Spherical Coordinates

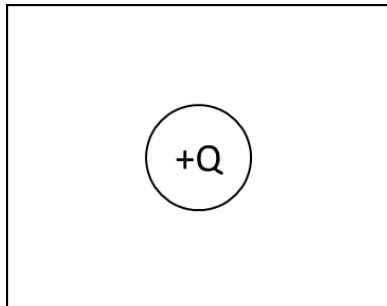Convert the following vectors to spherical coordinates and write down their directions

(1) Vector (0,0,1) at point (1,0,0)

(2) Vector (0,0,1) at point (0.6,0.8,0)
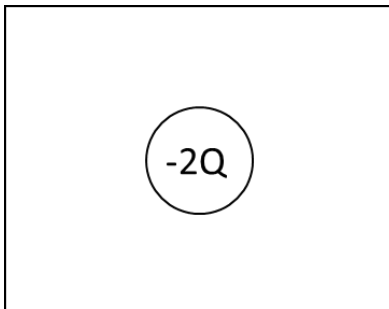
(3) Vector (1,0,0) at point (0,0,1)

2. Electrical Field lines and Equipotential surfaces

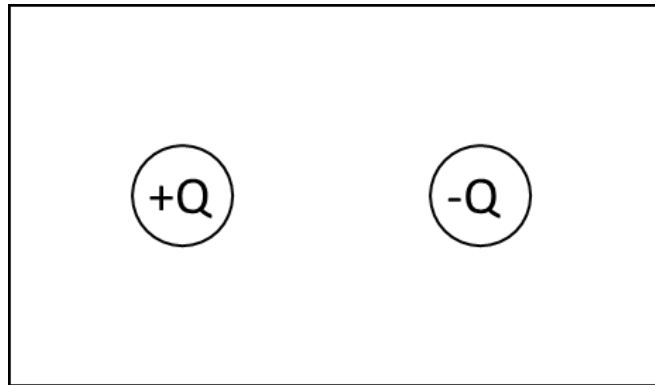Plot the electrical field lines and equipotential surfaces by estimation.
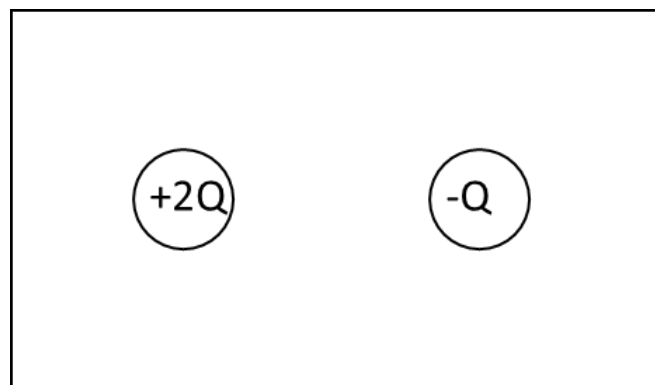

(1) Single positive charge

(2) Single negative charge

(3) Single dipole (one positive charge and one negative charge)

(4) One charge with +2Q and one charge with -Q

You can use this line **http://flashphysics.org/electricField.html** to help you observe electric field lines and equipotential surfaces.