

Preliminary Examination: Electricity and Magnetism
Department of Physics and Astronomy
University of New Mexico

Fall 2004

Instructions:

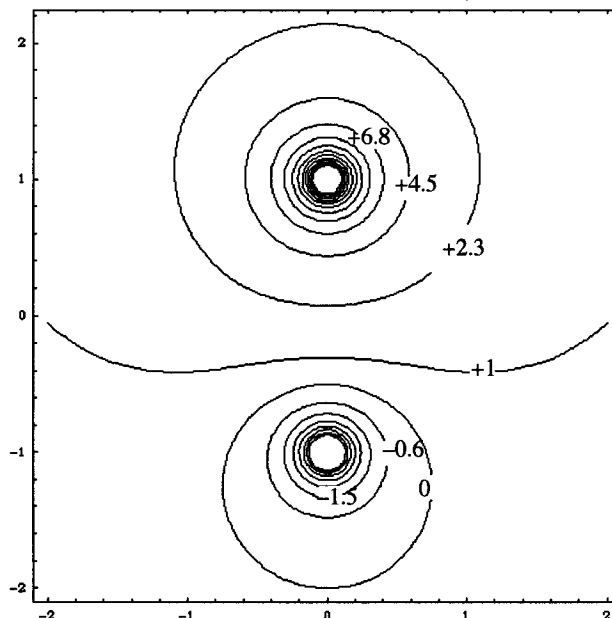
- The exam consists of two parts: 5 short answers (6 points each) and your choice of 2 out of 3 long answer problems (35 points each).
- Where possible, show all work, partial credit will be given.
- Personal notes on two sides of a 8X11 page are allowed.
- Total time: 3 hours

Good luck!

Short Answers:

S1. Graphed below are the equipotential contours associated with two point charges.

(i) **Sketch** the electric field lines. Show arrows denoting the direction of the field.



(ii) Which charge distribution could create this potential?

(a)

● +3q
● -q

(b)

● -3q
● +q

(c)

● -3q
● -q

(d)

● +3q
● +q