

Name: _____ Section: _____ Score: _____/20

1. Charge **A** with $+8\ \mu\text{C}$ and charge **B** with $-12\ \mu\text{C}$ are 7 cm apart.

(1) To assemble this charge configuration what work do you have to supply? [5]

(2) Now, charge **B** is gently released and moves to a point P which is 3 cm away from the fixed charge **A**. Its speed is 122 m/s at P. What is the mass of the charged particle **B**? [5]

2. There are four charges A - D on the plane. The equipotential curves are described in the following figure.

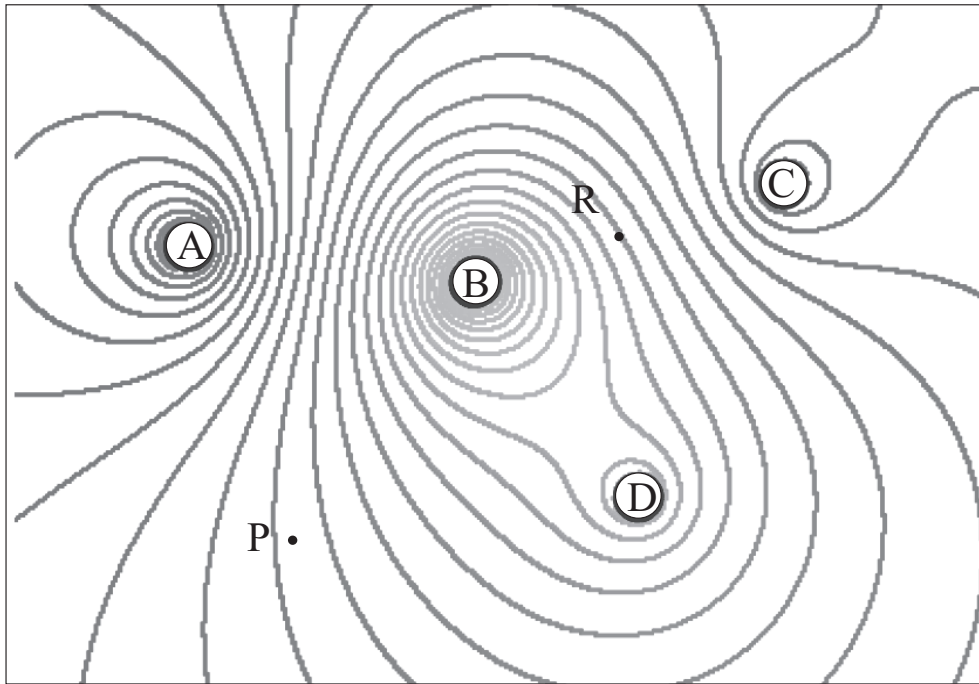


Figure 1:

(1) Suppose A is negatively charged. State the signs of all the remaining charges B-D [3].

(2) Indicate the direction of the electric field at P. [3]

(3) If A negative charge is moved from P to R by you, do you have to do positive work? You must explain your answer. [4]