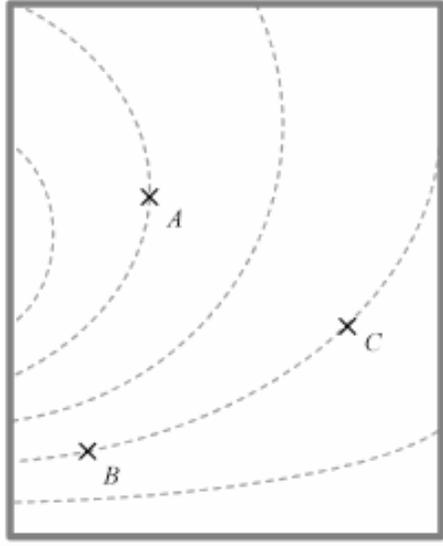


### Question 1

The diagram depicts a region of space. The dashed curves indicate positions of equal potential energy for a test charge  $+q$  that is placed at various locations within this region. (The potential energy difference *between* neighboring dashed lines is the same everywhere) Three such locations (A, B, and C) are labeled.



1. Rank the locations A, B, and C according to the magnitude of the force that would be exerted on the test charge  $+q$  at those locations, from greatest to smallest. Explain your reasoning.
2. Describe (as best you can in words) which direction the force on the test charge  $+q$  would be at point B?

### Question 2

The three figures below represents vector fields  $F(x, y)$  mapped in the  $x$ - $y$  plane. (They depict a vector quantity whose magnitude and direction varies only with  $x$  and  $y$ )

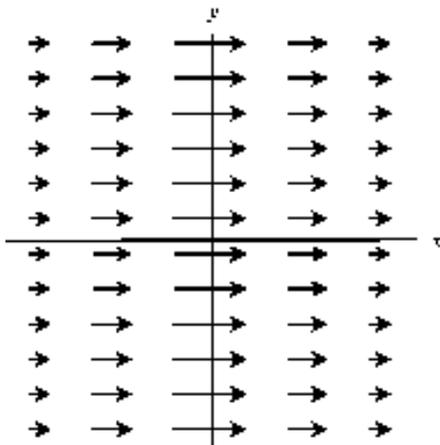


Fig 1:

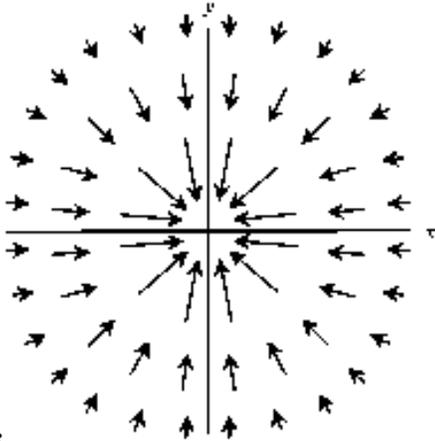


Fig 2:

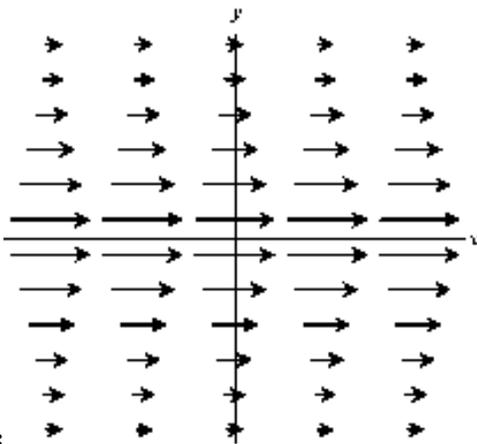


Fig 3:

List which of the three vector fields shown above have a curl equal to zero *everywhere* in the x-y plane? Explain briefly how you decided. (It might be none, one, or more than one - just list them, or say "none".)

### Question 3

If the fields in figures 1-3 above represent a force, which of them represents a *conservative* force? Explain your reasoning.

### Information

Every week, we will ask you to submit a question you have about the reading assigned for the upcoming class. What seemed hard, was something confusing, what would you like us to spend class time on? And/or, if you prefer, make a (constructive) comment on someone else's question!

**The place to do this is our "Discussion forum".** Find the forum for this week, and post there!

**(But, be sure to "submit" this survey at the bottom first, before going to that forum)**

Note: this is an *obligatory* part of our weekly survey - I don't grade you on the content of what you post, but I DO need you to post something to get credit!