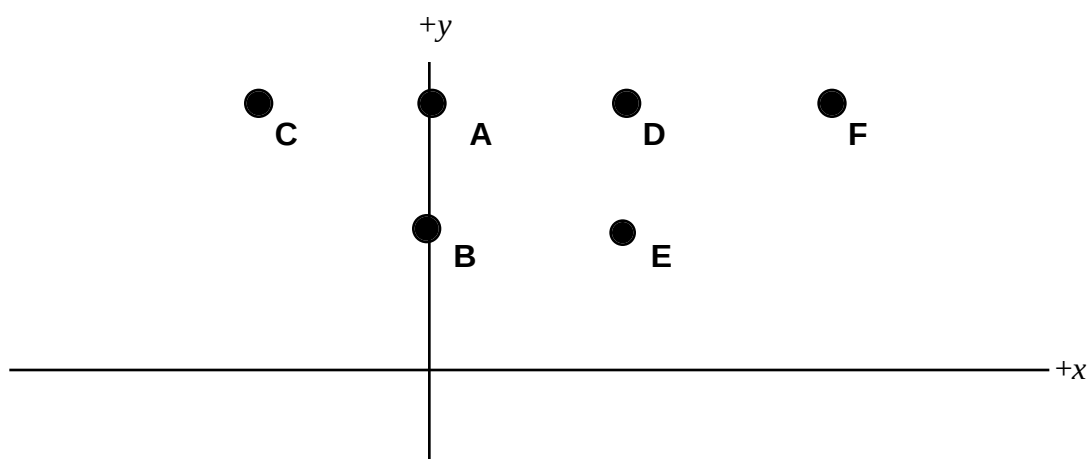


Uniform Electric Field—Change in Potential Energy of a Negative Charge¹⁵⁷

We have a large region of space that has a uniform electric field in the $+x$ direction ($\Rightarrow$). At the point (0,0) m, the electric field is $30 \hat{i}$ N/C and the electric potential is 100 volts.

Rank the points specified below on the basis of the change in the electric potential energy of a single negative charge of -5 C that is moved from the origin (0,0) to these particular points. That is, put first the point that will involve the largest change in electric potential energy as the charge is moved from (0,0) to that point, and put last the point that will involve the smallest change in electric potential energy as the charge is moved from (0,0) to that point. Note that the some of these changes may be negative and that $-5 < 2$.

A: (0, 6) m **B:** (0, 3) m **C:** (-3, 6) m **D:** (3, 6) m **E:** (3,3) m **F:** (6, 6) m



Greatest 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ Least

Or, the -5 C charge would have the same change in electric potential energy from the origin to all of these points. _____

Or, the -5 C charge would have no change in electric potential energy from the origin to all of these points. _____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Guessed

Sure

Very Sure

1 2 3 4 5 6 7 8 9 10

¹⁵⁷ C. Hieggelke