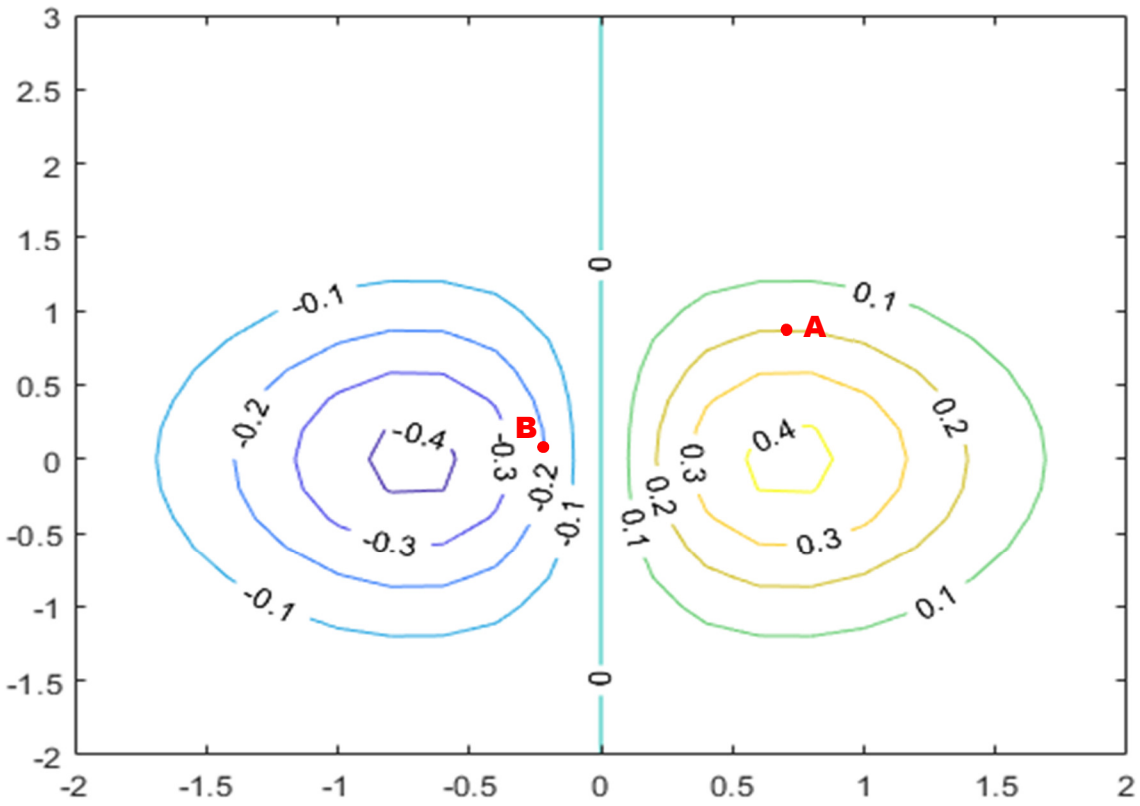
Electric Field Mapping Pre-Lab Version A
(worth 4 points out of 10 total for the lab…due when I *start* taking roll…late work receives zero credit)
I expect you to submit *a single separate piece of paper with your answers* (handwritten submission only).
This paper must have your full name and lab section (time lab meets will suffice) written in the upper right corner.
If you use engineering paper, please ensure the grid is on the back side of the work.
If you hand in this page with your answers written on it you will receive zero credit.

An equipotential map is shown below. The horizontal axis ranging from -2 to +2 indicates horizontal position in cm. The vertical axis ranging from -2 to +3 indicates vertical position in cm. The contour lines (called equipotential lines) in the map indicate the voltage at any position on that line. For instance, the darkest purple line is labeled with voltage -0.4 V. Notice the point **A** labeled on the 0.2 V equipotential line while point **B** is labeled on the -0.2 V equipotential.



Questions to answer:

1) Write down a definition for "equipotential" and cite your source (I don't need proper APA style or anything like that…just tell me what website or book you used).
2) Do electric field lines point parallel or perpendicular to equipotentials?
3) Do electric field lines point towards higher or lower voltage (towards more positive or more negative equipotentials)?
4) Estimate the *direction* of the of the electric field at **A**. Which best describes the direction: $+\hat{\imath}, -\hat{\imath}, +\hat{\jmath}, -\hat{\jmath}$?
5) In lab we will use $E_x = -\frac{\Delta V}{\Delta x}$ and $E_y = -\frac{\Delta V}{\Delta y}$ to compute the components of the electric field. Estimate the *magnitude* of the electric field at **A**. Show your work so I can follow your estimate. Include units and write your final answer with 2 sig figs. Your estimate need not be perfect but within about 15% of my answer to receive full credit. Hint: before blindly trying to compute *both* E_x& E_y, consider your previous answers.