

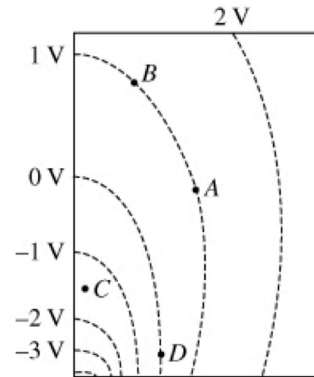
PHYS 234: Recitation 12  
(Quiz: Apr 22, 2020)

1. **Estimation:** How many golf balls fit in a suitcase? *Clearly state your assumptions and how you came to the numbers you estimate.*

2. **Essay:** Give an example of a capacitor in a biological system. Explain what biological components play the roles of the two parallel plates and the charges.

3. The electric potential at a point halfway between two identical charged particles is 180 V. What is the potential at a point that is 25% of the way from one particle to the other?

4. Consider the two-dimensional space shown to the right. The dashed lines indicate curves of equal potential.



A. How much work (in Joules) do you need to do to move a 1 C charge from point A to point B?

B. How much work (in Joules) do you need to do to move a 1 C charge from point D to point A?

C. How much work (in Joules) do you need to do to move a 1 C charge from point B to point D?

D. Is the magnitude of the electric field at point C greater than, less than, or equal to that at point A? **Explain.**

5. Two large, parallel, oppositely-charged sheets are separated by a distance  $d$ , small compared to the size of the sheets. Draw plots of the  $x$  and  $y$  components of the electric field and potential along the  $x$ -axis. Include the space outside the plates, both to the left and right.

