WebAssign
CH17-HW03-FALL2010 (Homework)

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PHYS 272-FALL 2012, Fall 2012
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Current Score : 14 / 14 **Due :** Friday, September 28 2012 11:59 PM EDT

1. 1/1 points | Previous Answers MI3 17.5.X.056

Location *C* is 0.04 m from a small sphere which has a charge of 2 nanocoulombs uniformly distributed on its surface. Location *D* is 0.12 m from the sphere.

What is the change in potential along a path from *C* to *D*?

ΔV = -300 V

- *Read the eBook*
- Section 17.5

2. 4/4 points | Previous Answers MI3 17.5.X.059

Consider the following.

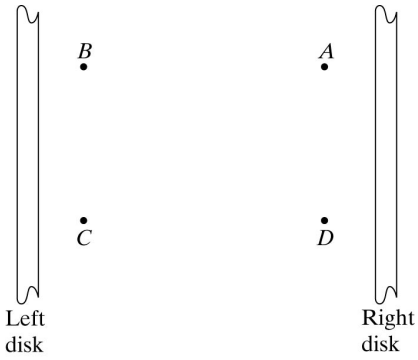
Locations *A* and *B* are on the +x-axis. *A* is at location < a, 0, 0>, and *B* is at location < b, 0, 0>. The table below contains possible equations for the potential difference $V_A - V_B$. For each equation for electric field along the x axis, choose the correct equation for the potential difference $V_A - V_B$. (Enter the number from the left column that corresponds to the potential difference.)

1	V_A - V_B = K(a^2-b^2)
2	V_A - V_B = K(1/a-1/b)
3	V_A - V_B = 0
4	V_A - V_B = K(a-b)
5	V_A - V_B = 1/2K(1/a^2-1/b^2)
6	V_A - V_B = 1/2K(b^2-a^2)
7	V_A - V_B = Kln(b/a)
8	V_A - V_B = K(1/a^3*a-1/b^3*b)

E = K/x^3	5 ✓
E = Kx	6 ✓
E = K/x^2	2 ✓
E = K/x	7 ✓

- *Read the eBook*
- Section 17.5

3. 2/2 points | Previous Answers MI3 17.4.X.053



You need to calculate the potential difference V_B - V_A.

What is the direction of the path? g ✓

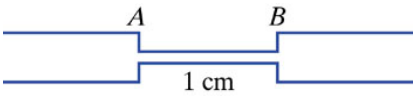
If the charge on the right plate is negative and the charge on the left plate is positive, what is the sign of V_B - V_A? positive ✓

- *Read the eBook*
- Section 17.4

4. 3/3 points | Previous Answers MI3 17.3.X.044

Potential difference along a wire

The potential difference from one end of a 1 cm long wire to the other in a circuit is $\Delta V = V_B - V_A =$ 1.3 volts, as shown in the figure.



(a) Which end of the wire is at the higher potential?

- ○ A
- ◉ B
- ○ They are at the same potential

✓

(b) What is the magnitude of the electric field E inside the wire?

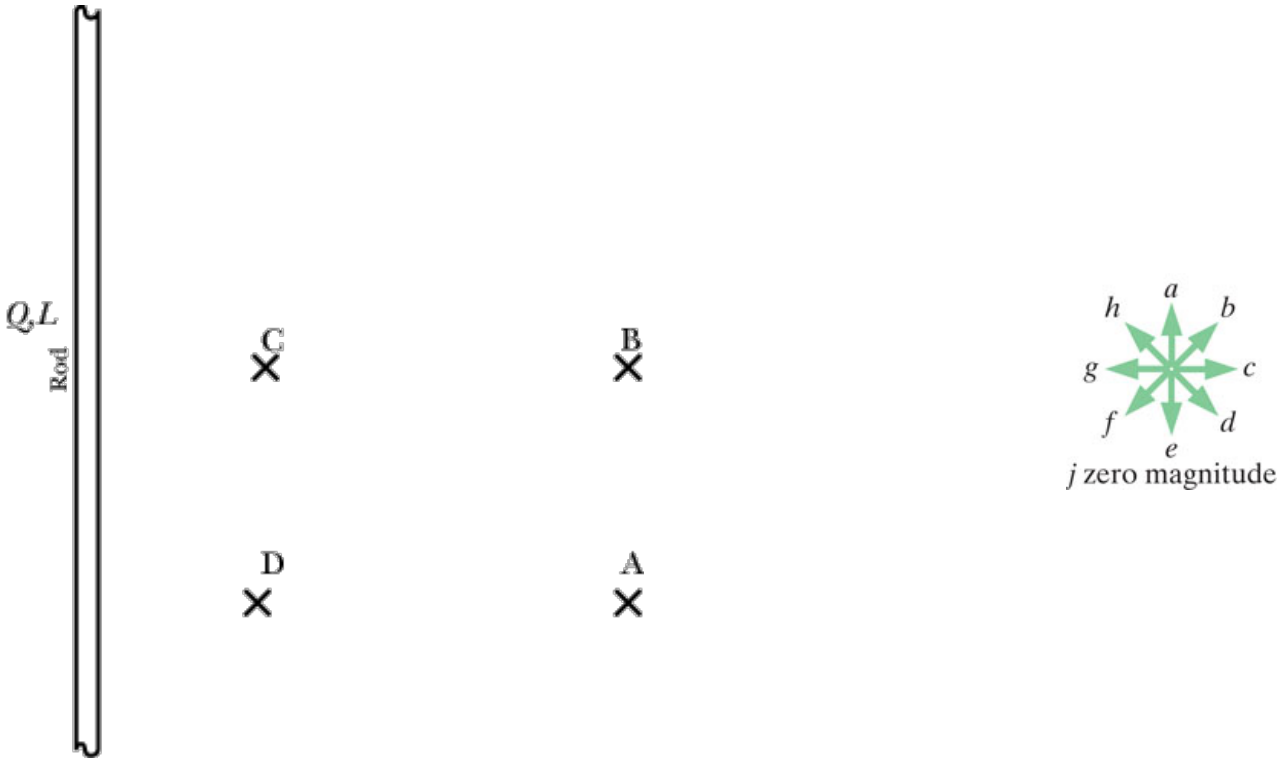
$E =$ 130 ✓ V/m

(c) What is the direction of the electric field inside the wire?

- ◉ to the left
- ○ no direction because $E = 0$
- ○ to the right

✓

5. 2/2 points | Previous Answers MI3 17.4.X.054



You need to calculate the potential difference V_A - V_D.

What is the direction of the path? c ✔

If the charge on the rod is negative, what is the sign of V_A - V_D? positive ✔

- *Read the eBook*
- Section 17.4

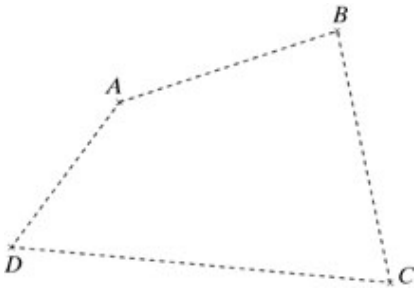
6. 2/2 points | Previous Answers MI3 17.6.X.075

In a region of space there are several stationary charged objects. Along a path from *A* - *B* - *C* - *D* as shown in the figure below, you measure the following potential differences:

$V_B - V_A = 12$ V

$V_C - V_B = -3$ V

$V_D - V_C = -19$ V



(a) What is the potential difference $V_A - V_D$?

$V_A - V_D =$ 10 V

(b) Which of the following concepts are important in finding the answer to part (a)?

- [ ] The potential near a negative point charge is negative.
- [ ] The potential inside a metal at equilibrium is constant.
- [ ] The potential near a point charge is proportional to $1/r$.
- [x] The sum of the potential differences along a round-trip path must be zero.
- [ ] Change in potential energy = $q\Delta V$.

- *Read the eBook*
- Section 17.6