assignment 3
sb-prob2506a.problem

Due date: Sun Feb 1 11:59:59 pm 2026 (EST)

1a. A uniform electric field of magnitude 209V/m is directly in the positive x-direction. A 1.40E-5C charge moves from the origin to the point (x,y)=(23.1cm, 52.0cm). What was the change in the potential energy of this charge?

You are correct. Your receipt no. is 163-0 1b. Through what potential difference did the charge move?

You are correct. Your receipt no. is 163-9307

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sb-prob2524a.problem

3a. Two point charges each of magnitude 1.95μC are located on the x axis. One is at x=1.10m, and the other is at x=-1.10m. Determine the electric potential on the y axis at y=0.548m.

You are correct. Your receipt no. is 163-441 3b. Calculate the electric potential energy of a -2.82μC charge placed on the y axis at y=0.548m.

You are correct. Your receipt no. is 163-4171

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sb-prob2558.problem

6. An electron is released from rest on the axis of a uniform positively charged ring, 0.188m from the ring's center. If the linear charge density of the ring is +0.156nC/m and the radius of the ring is 0.376m, how fast will the electron be moving when it reaches the center of the ring?

You are correct. Your receipt no. is 163-5027

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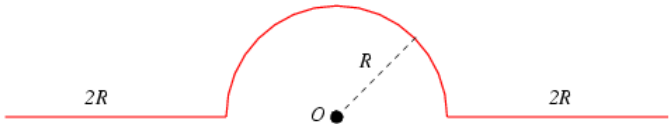
sb-prob2546.problem

4. A wire of finite length that has a uniform linear charge density λ=5.16E-9C/m is bent into the shape shown below. Find the electric potential at point O.

You are correct. Your receipt no. is 163-719



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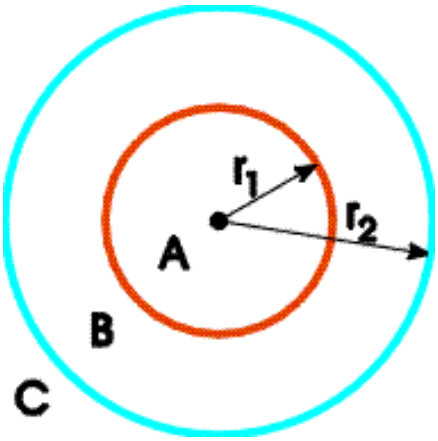
sb-prob2565a.problem

Consider two thin, conducting, spherical shells as shown in cross-section in the figure below. The inner shell has a radius r_1 = 19.6cm and a charge of 10.5nC. The outer shell has a radius r_2 = 28.6cm and a charge of -28.7nC.



Calculate the electric field **E** at r = 12.0cm. (Take the positive direction to be radially outwards.)

You are correct. Your receipt no. is 163-6482 Calculate the electric field **E** at r = 23.7cm.

You are correct. Your receipt no. is 163-2414 Calculate the electric field **E** at r = 41.7cm.

You are correct. Your receipt no. is 163-8634 Calculate the electric potential V at r = 12cm, with V = 0 at $r = \infty$.

You are correct. Your receipt no. is 163-4411 Calculate the electric potential V at r = 23.7cm.

You are correct. Your receipt no. is 163-2479 Calculate the electric potential V at r = 41.7cm.

You are correct. Your receipt no. is 163-9033

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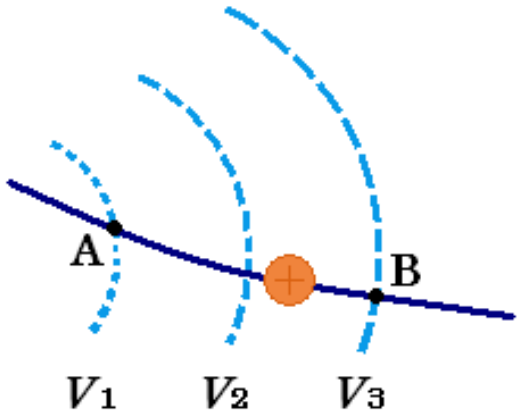
kn-prob2944.problem

For the following image V_1=56.0V, V_2=37.5V, and V_3=19.0V. A proton's speed as it passes point A is 53590.0m/s and it follows the trajectory shown. What is the proton's speed at point B?

You are correct. Your receipt no. is 163-6784



kn-prob2954.problem
A proton is fired from far away toward the nucleus of a mercury atom. Mercury is element number 80, and the diameter of the nucleus is 13.8fm. If the proton is fired at a speed of 4.29E+7m/s, what is its closest approach to the surface of the nucleus? (Assume the nucleus remains at rest.)

You are correct. Your receipt no. is 163-8679

kn-prob2942.problem
A proton and an alpha particle (q = +2.00e, m = 4.00u) are fired directly toward each other from far away, each with an initial speed of 0.239c. What is their distance of closest approach, as measured between their centers? (Hint: There are two conserved quantities. Make use of both.)

You are correct. Your receipt no. is 163-4516

kn-prob2960.problem
Two spherical drops of mercury each have a charge of 0.158nC and a potential of 347.0V at the surface. The two drops merge to form a single drop. What is the potential at the surface of the new drop?

You are correct. Your receipt no. is 163-6250

kn-prob2908.problem
Three electrons form an equilateral triangle 2.45nm on each side. A proton is at the center of the triangle. What is the potential energy of this group of charges?

You are correct. Your receipt no. is 163-3639

kn-prob2978.problem
The four 1.63g spheres shown below have q_{+ve} = 11.0nC and d=1.63cm. The spheres are released simultaneously and allowed to move away from each other. What is the speed of each sphere when they are very far apart?

You are correct. Your receipt no. is 163-8776