Test 2

Show all your work for full credit.

Remember that vectors have components (or magnitude and direction).

Ask if anything seems unclear.

Formulae and Constants:

For an electron:
\[ m_e = 9.11 \times 10^{-31} \text{ kg} \]
\[ e = |q_e| = 1.602 \times 10^{-19} \text{ C} \]

\[ U = qV \]
\[ V_b - V_a = -\int_a^b \mathbf{E} \cdot d\mathbf{s} \]
\[ V = \int \frac{dq}{4\pi\varepsilon_0 l} \quad E_s = -\frac{\partial V}{\partial s} \]

\[
\begin{array}{|c|c|}
\hline
\text{series} & \text{parallel} \\
C_{eq} = \frac{1}{\sum (1 / C_i)} & C_{eq} = \sum C_i \\
R_{eq} = \sum R_i & R_{eq} = \frac{1}{\sum (1 / R_i)} \\
\hline
\end{array}
\]

\[ C = \frac{Q}{V} \quad U_C = \frac{1}{2} QV \quad u = \frac{1}{2} \varepsilon_0 E^2 \]
\[ C = \kappa \varepsilon_0 A/d \]

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