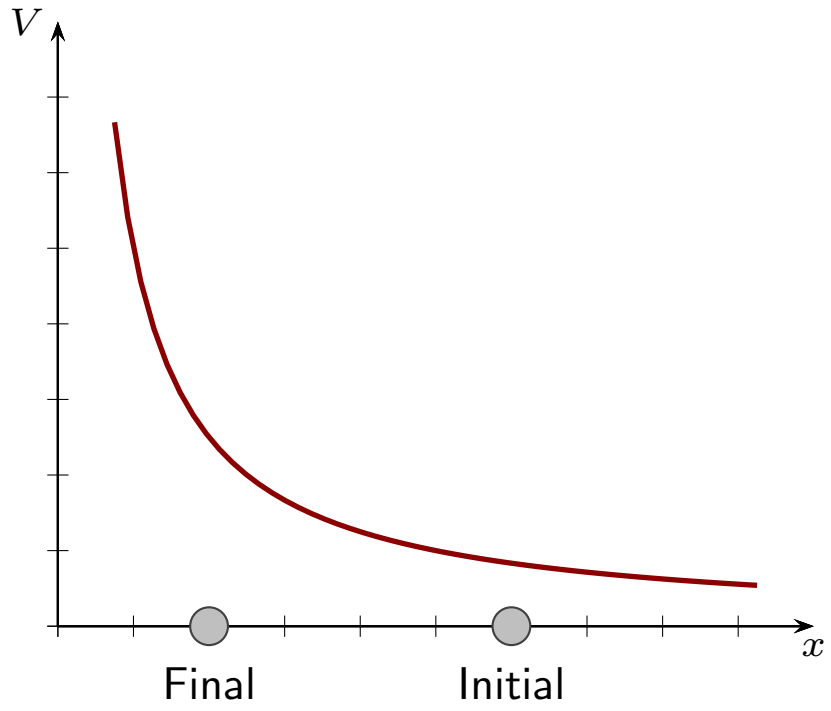
Warm Up Question 1

A negative point charge is held fixed. How does the electric potential at a point further from the charge compare (lower, higher,...) to the electric potential closer to the charge? Explain your answer.

1. Smaller. When r is larger kq/r is smaller.
2. Larger. Negative matters!

Question 1

A source charge produces the following electrostatic potential. A probe charge moves along the x axis from the illustrated initial point to the illustrated final point.



Which of the following is true about the probe's speed during the motion?

1. Speeds up if positive, speeds up if negative.
2. Speeds up if positive, slows down if negative.
3. Slows down if positive, speeds up if negative.
4. Slows down if positive, slows down if negative.

Question 2

A charged particle, Zog, is in the vicinity of various source charges. The only forces exerted on Zog are those exerted by the source charges. Initially Zog is at location A and moves with speed $20\,\mathrm{m/s}$. Later Zog is at location B and moves with speed $5\,\mathrm{m/s}$.

Which of the following is true regarding the electric potential difference

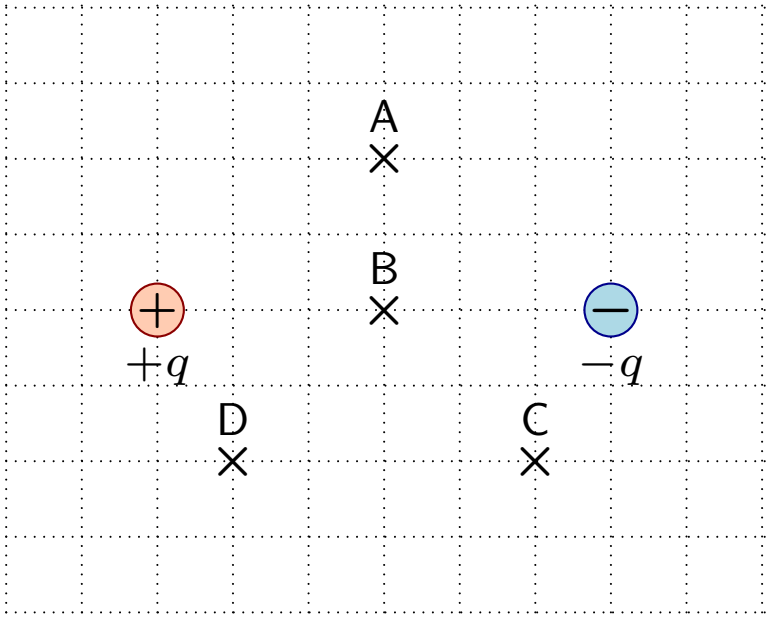
$$\Delta V = V_\mathrm{B} - V_\mathrm{A}$$

where V_A is the potential at A, etc, . . . ?

1. $\Delta V = 0$.
2. $\Delta V > 0$ always.
3. $\Delta V < 0$ always.
4. $\Delta V > 0$ for positive Zog, $\Delta V < 0$ for negative Zog.
5. $\Delta V < 0$ for positive Zog, $\Delta V > 0$ for negative Zog.

Question 3

Two source charges are located as illustrated. The magnitudes of the charges are equal but their signs are opposite.

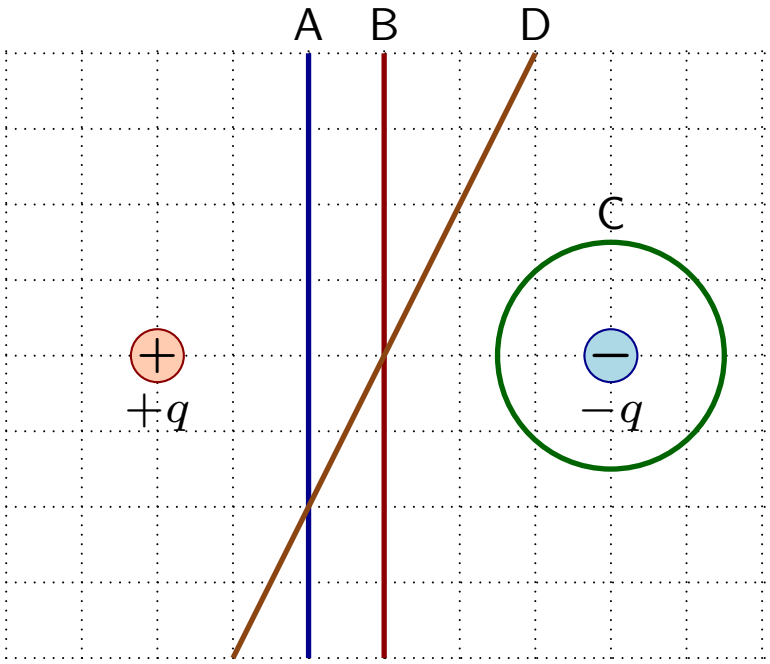


Which of the following represents the rank of the potentials at the various points?

1. $V_{\mathrm{A}} = V_{\mathrm{B}} = V_{\mathrm{C}} = V_{\mathrm{D}}$
2. $V_{\mathrm{A}} = V_{\mathrm{B}} < V_{\mathrm{C}} = V_{\mathrm{D}}$
3. $V_{\mathrm{D}} < V_{\mathrm{A}} = V_{\mathrm{B}} < V_{\mathrm{C}}$
4. $V_{\mathrm{C}} < V_{\mathrm{A}} = V_{\mathrm{B}} < V_{\mathrm{D}}$

Question 4

Two source charges are located as illustrated. The magnitudes of the charges are equal but their signs are opposite.



Which represents an equipotential?

1. A only.
2. B only.
3. C only.
4. D only.
5. B and C.