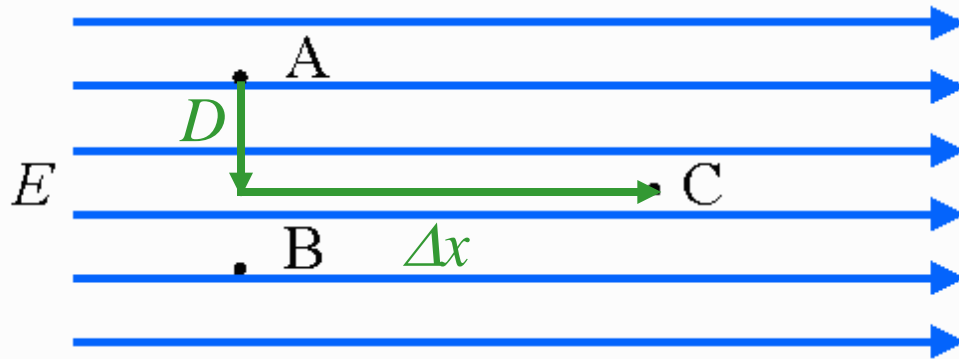


Electric Potential from E field



Consider the three points A, B, and C located in a region of constant electric field as shown.



What is the sign of $\Delta V_{AC} = V_C - V_A$?

A) $\Delta V_{AC} < 0$

B) $\Delta V_{AC} = 0$

C) $\Delta V_{AC} > 0$

E points down hill

Remember the definition: $\Delta V_{A \rightarrow C} = -\int_A^C \vec{E} \cdot d\vec{l}$

Choose a path (any will do!)

$$\Delta V_{A \rightarrow C} = -\int_A^D \vec{E} \cdot d\vec{l} - \int_D^C \vec{E} \cdot d\vec{l} \quad \longrightarrow \quad \Delta V_{A \rightarrow C} = 0 - \int_D^C \vec{E} \cdot d\vec{l} = -E\Delta x < 0$$