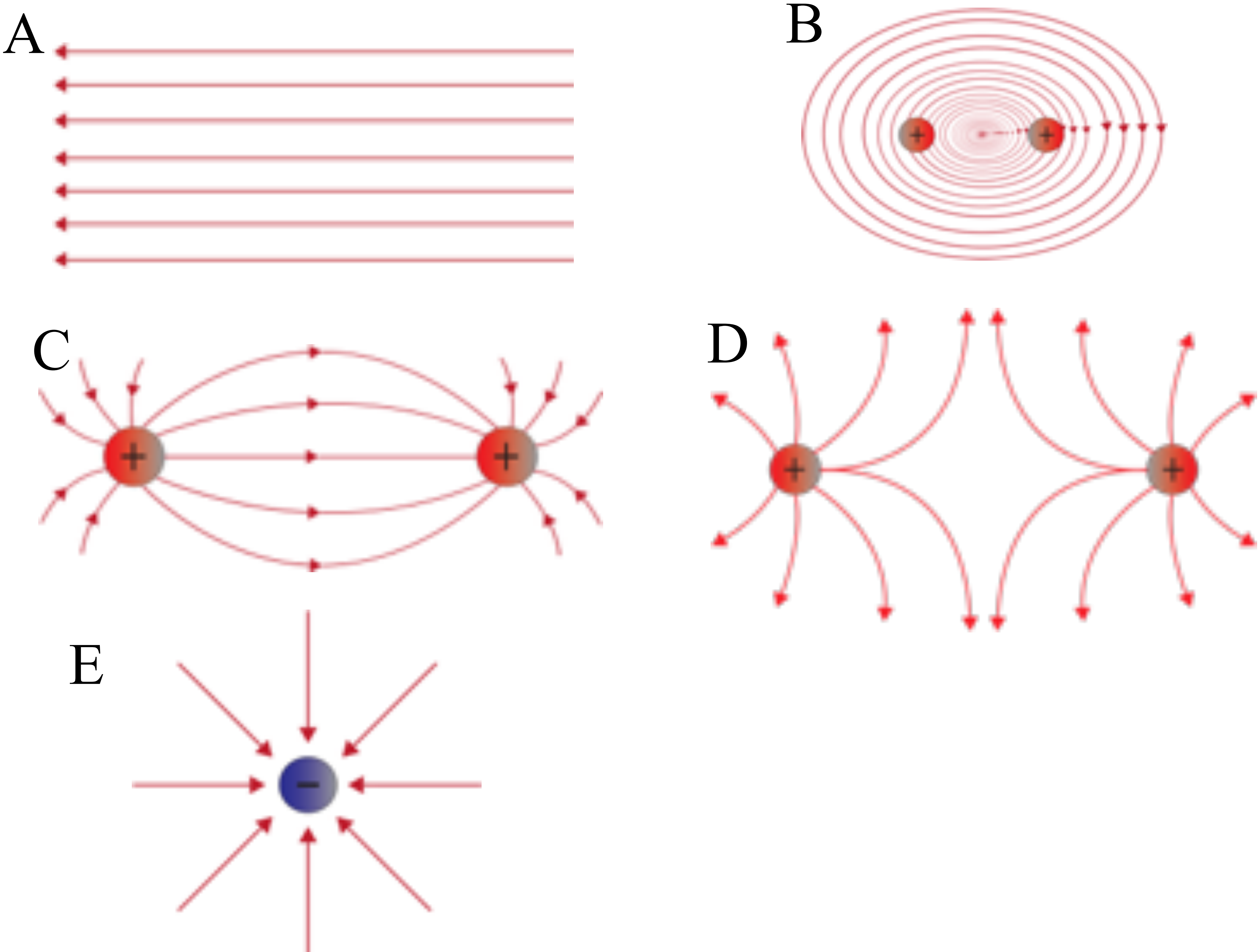
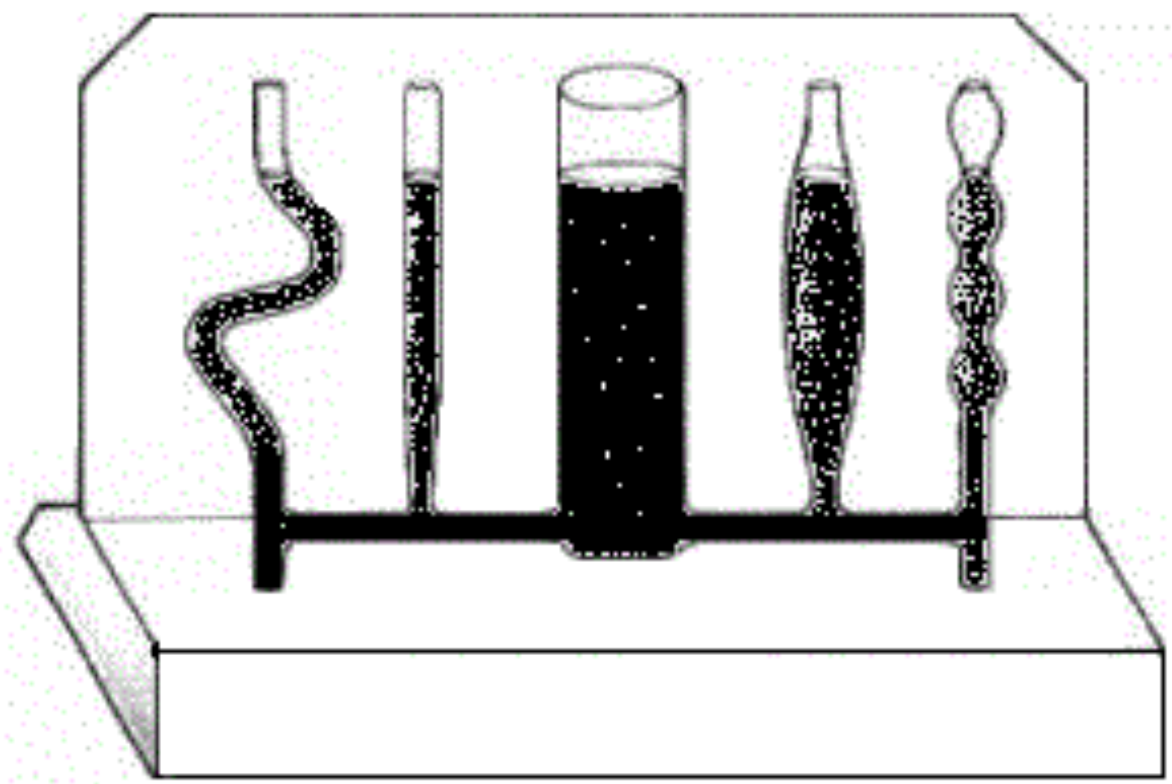


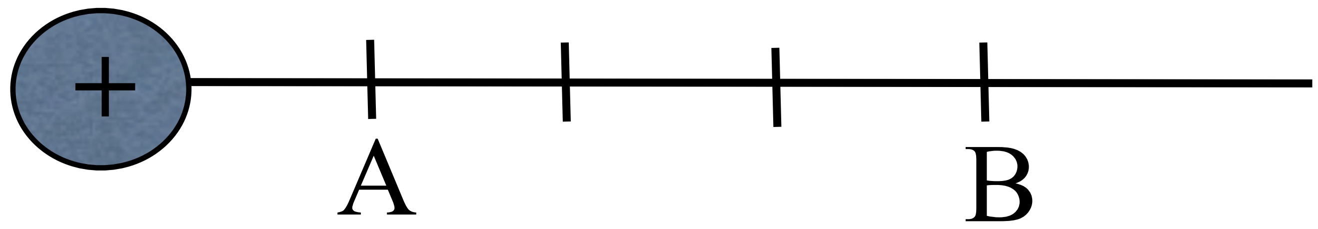

Which of these diagrams is a uniform electric field?

12.2.5a



Water Level in Different Sized Tubes that are in contact

Electrically charged objects that are in contact will also have the same Potential.




In the above diagram, the electric potential at point A is V. What is the electric potential at point B in terms of V?

A) 2 V

B) 4 V

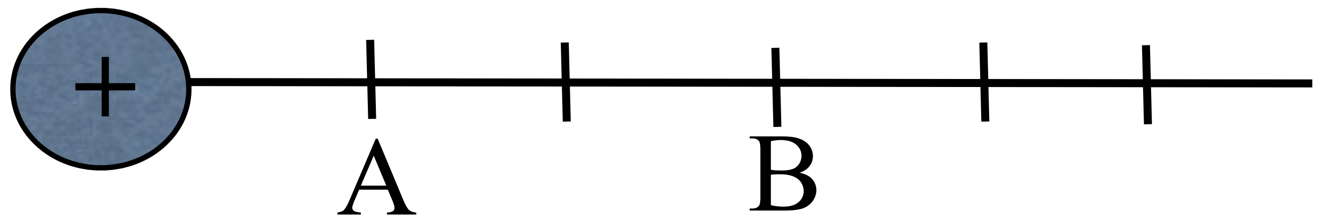
C) V

D) V/4

E) V/2

Remember that the formula for the Potential of a Point Charge is

$$V = k\frac{q_1}{r} = \frac{1}{4\pi\varepsilon_o}\frac{q_1}{r}$$




In the above diagram, the electric field at point A is E. What is the electric field at point B in terms of E?

A) 3 E

B) 9 E

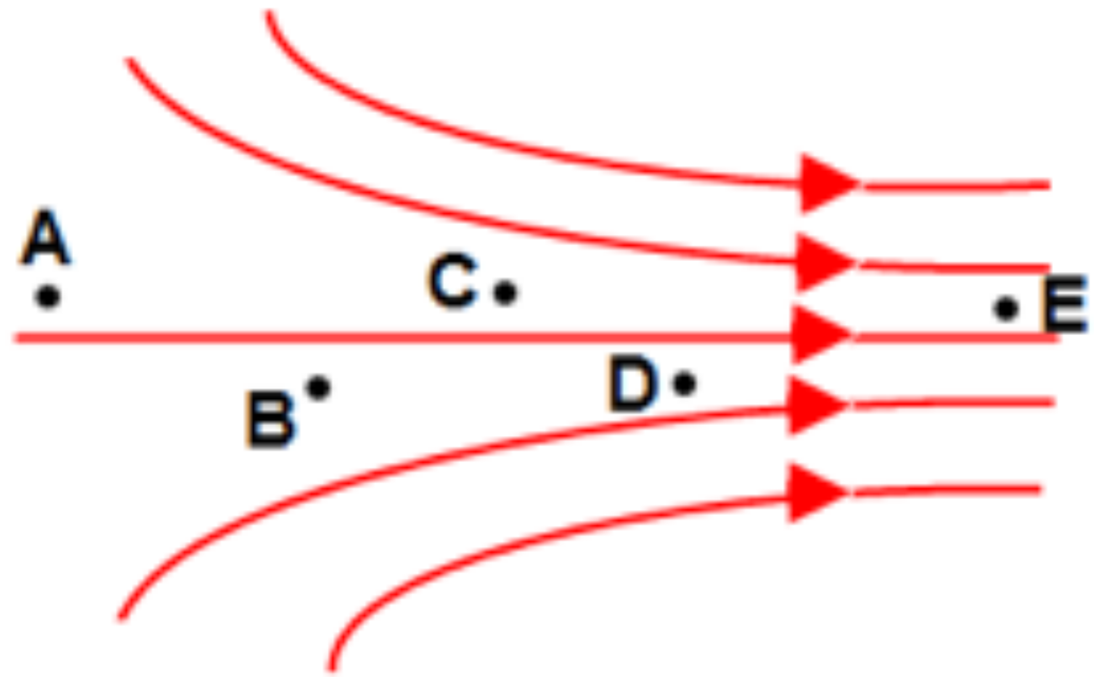
C) E

D) E/9

E) E/3

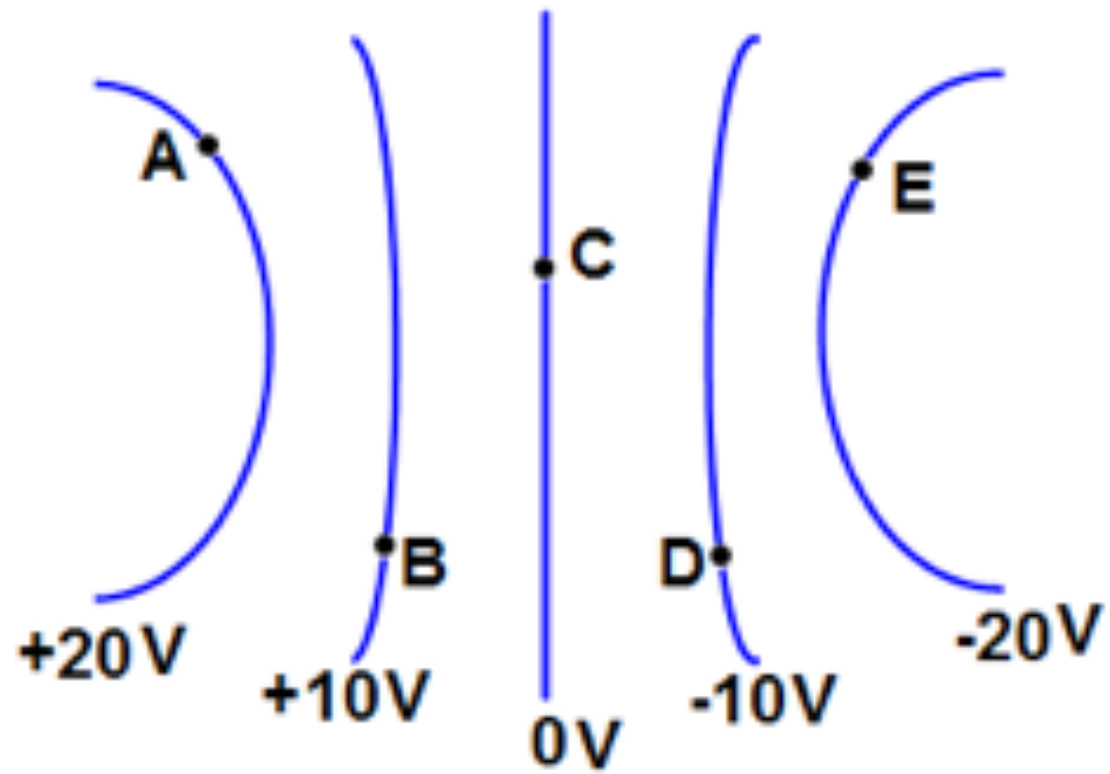
Remember that the formula for the Field due to a Point Charge is

$$E = k\frac{q_1}{r^2} = \frac{1}{4\pi\varepsilon_o}\frac{q_1}{r^2}$$



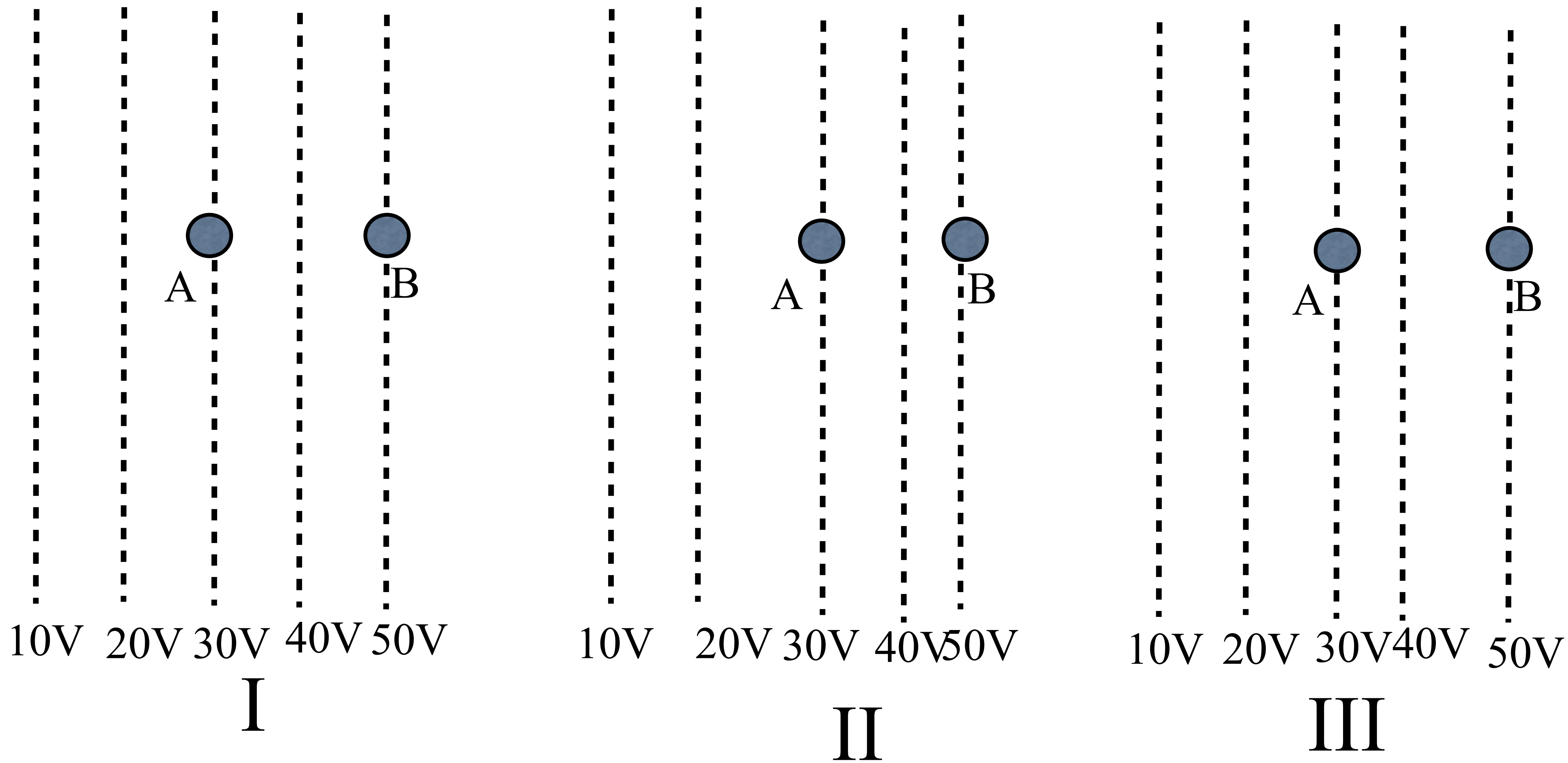

A non-uniform electric field is represented by the diagram. At which of the following points is the electric field greatest in magnitude?

A) A
B) B
C) C
D) D
E) E




A non-uniform electric field is represented by equipotential lines. What is the direction of the electric field at point A?

A ←     B →     C ↑     D ↓     E ↗


A
B
10V 20V 30V 40V 50V
I
A
B
10V 20V 30V 40V 50V
II
A
B
10V 20V 30V 40V 50V
III

1. The five lines represent values of the potential along those lines. These are called equipotentials. A $1\mu C$ positive charge is moved from A to B.
How does the amount of work needed to move this charge compare for these three cases?

(a) Most work required in I.

(b) Most work required in II.

(c) Most work required in III.

(d) I and II require the same amount of work but less than III.

(e) All three would require the same amount of work.

2. How does the magnitude of the electric field at B compare for these three cases?

A. I>III>II

B. I>II>III

C. III>I>II

D. II>I>III

E, I=II=III

For Potential, V, as with ALL energies, there is no such things as an absolute value of energy.

By absolute value I do not mean always positive, as we do with that term in maths, but that the ONLY thing that ever matters is the DIFFERENCE of energies between two points. Difference is meaningful, the number at either end is not.

We often define the Earth as ZERO potential but we could call it - a million if we wanted to. Then, the voltage of our electric circuits would a a million + 220 Volts or -999780 Volts. Only Potential Difference, $\Delta V = V_2 - V_1$, matters!

Choose the correct statement:

A) A proton tends to go from a region of low potential to a region of high potential

B) The potential of a negatively charged conductor must be negative

C) If E=0 at a point P, then V must be zero at P

D) If V=0 at a point P, then E must be zero at P

E) None of the above are correct

An electric field is created by two parallel plates. At which of the following points is the electric field the strongest?

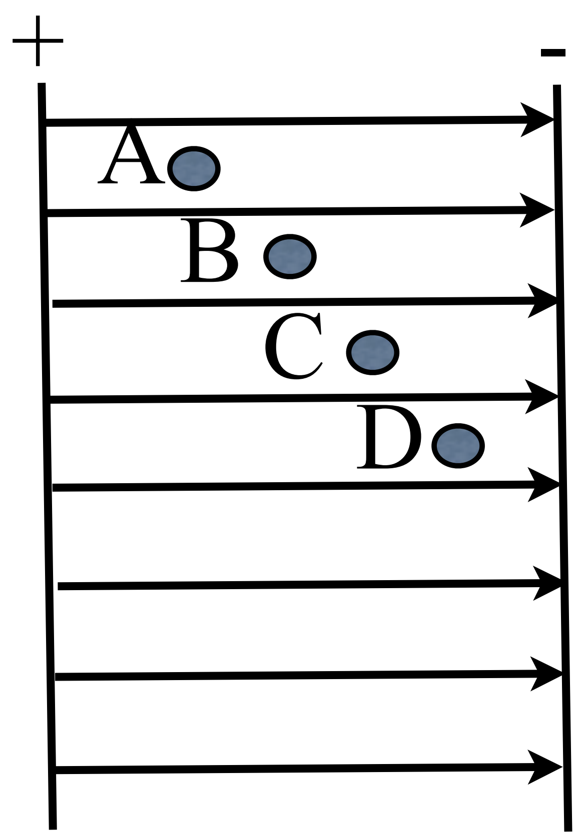
A. A

B. B

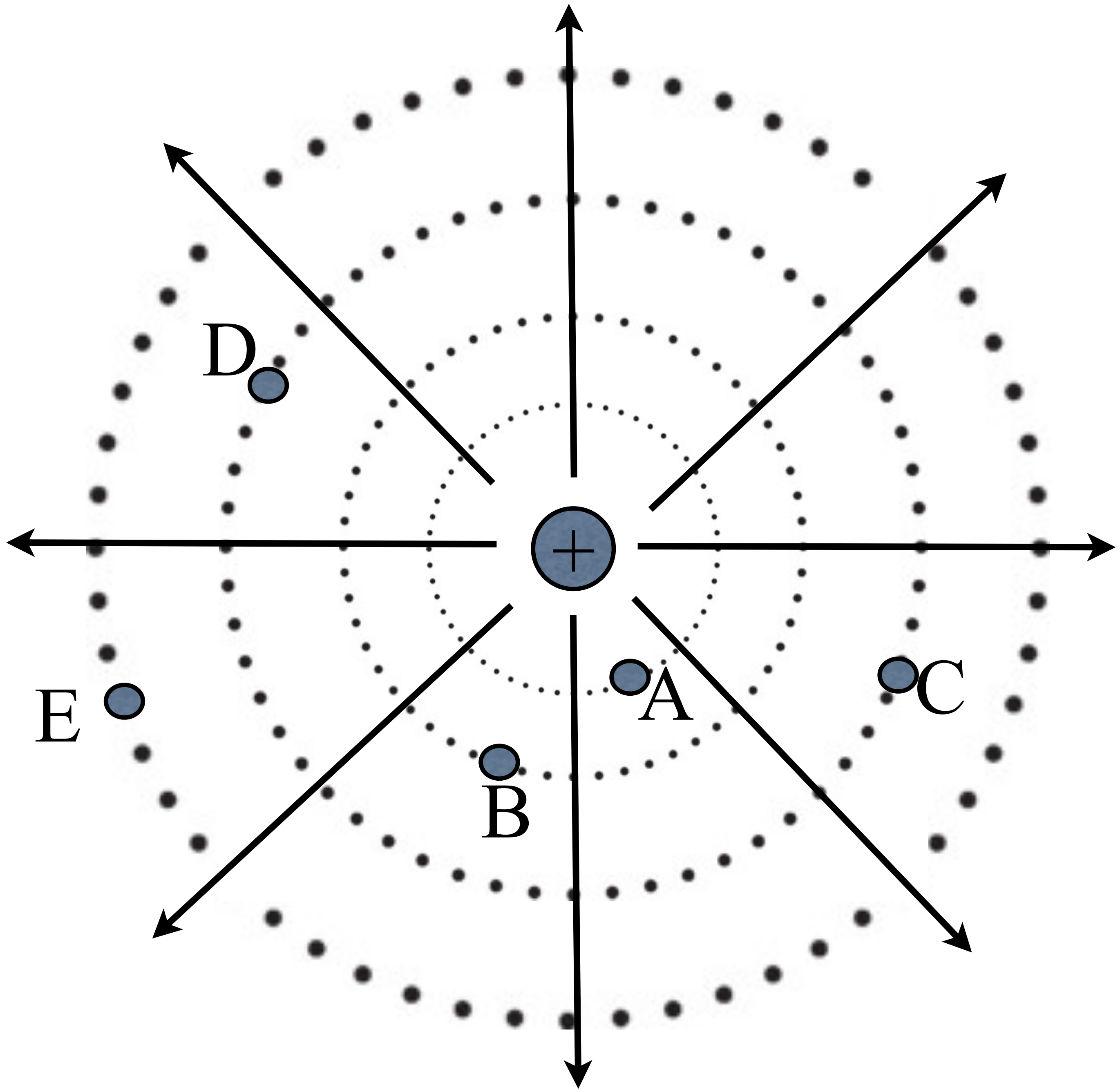
C. C

D. D

E. The electric field is the same at all points




Remember that we have seen that the E field between two such plates is Zero outside them and constant and parallel between them.




An electric field due to a positive charge is represented by the diagram. Which of the following points has higher potential?

A. A B. B C. C D. D E. E