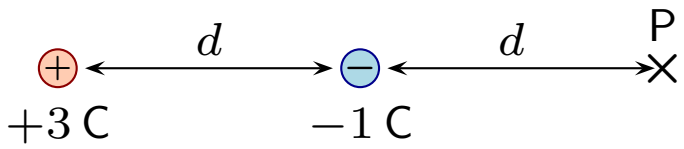
Question 1

Two source charges are located as illustrated.

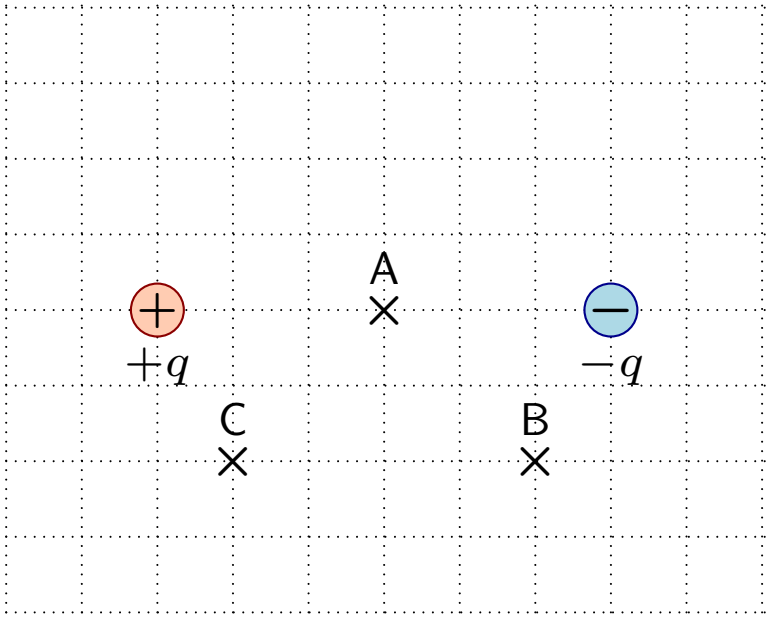


Which of the following represents the electric potential at point P?

1. $V = 2\,\mathrm{V}$
2. $V = k\dfrac{1\,\mathrm{C}}{d}$
3. $V = k\dfrac{3\,\mathrm{C}}{d} + k\dfrac{1\,\mathrm{C}}{d}$
4. $V = k\dfrac{3\,\mathrm{C}}{d} - k\dfrac{1\,\mathrm{C}}{d}$
5. $V = k\dfrac{3\,\mathrm{C}}{2d} - k\dfrac{1\,\mathrm{C}}{d}$

Question 2

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

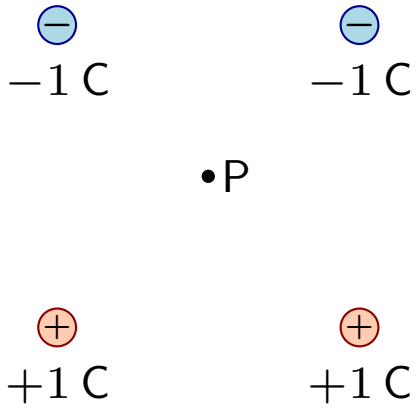


Which of the following represents the rank of the potentials at the various points?

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

Question 3

Four source charges are placed at the corners of a square as illustrated. The point P is at the center of the arrangement.

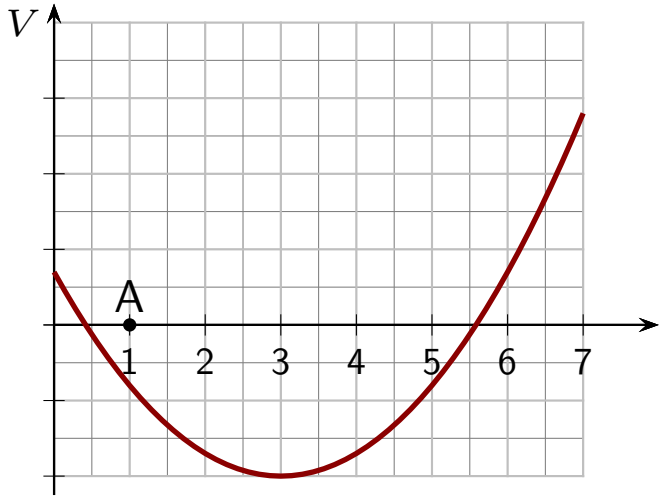


Which of the following is true at point P?

1. $V = 0$ and $\vec{\mathrm{E}} = 0$
2. $V = 0$ and $\vec{\mathrm{E}} \neq 0$
3. $V \neq 0$ and $\vec{\mathrm{E}} = 0$
4. $V \neq 0$ and $\vec{\mathrm{E}} \neq 0$

Question 4

A charged particle can move left and right along on line. Hidden source charge produce the illustrated electric potential. The particle has a positive charge and is released from rest at A.

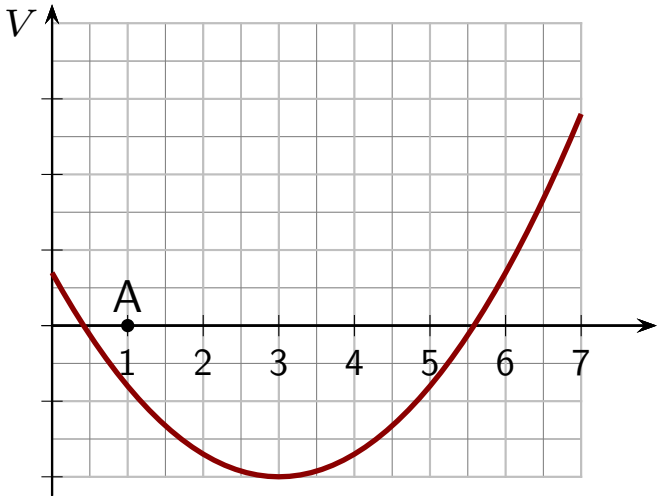


Which of the following is the furthest location to the right that the particle reaches?

1. It keeps moving right without stopping.
2. Around the "3" mark.
3. Around the "4" mark.
4. Around the "5" mark.
5. Around the "6" mark.

Question 5

Various positively charged particles can move left and right along on line. Hidden source charge produce the illustrated electric potential. In two separate experiments particle are released from rest at point A. One particle has charge $1\,\mathrm{C}$ and the other $500\,\mathrm{C}$.



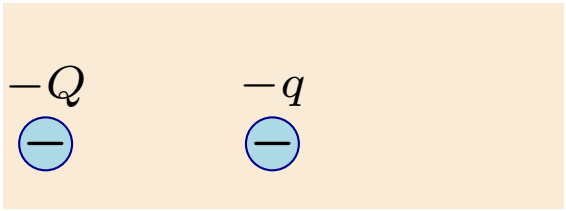
Which of the following is true about the furthest location to the right that either reaches?

1. Both reach the same location.
2. The $1\,\mathrm{C}$ particle travels further right than the $500\,\mathrm{C}$ charge.
3. The $500\,\mathrm{C}$ particle travels further right than the $1\,\mathrm{C}$ charge.

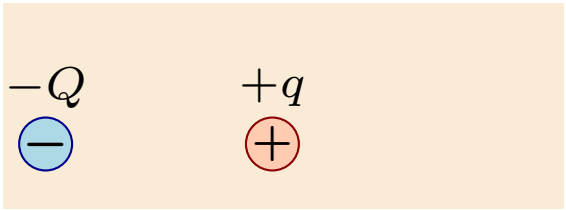
Question 6

The diagrams illustrate arrangements of charges where the symbols Q and q represent particular fixed values of charge.

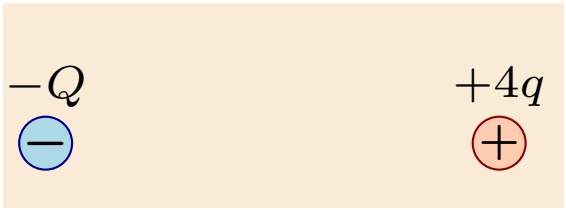
A



B



C



Rank the situations in order of increasing electrostatic potential energy.

1. A $>$ B $>$ C
2. A $>$ B $=$ C
3. A $>$ C $>$ B
4. C $>$ B $>$ A
5. C $=$ B $>$ A