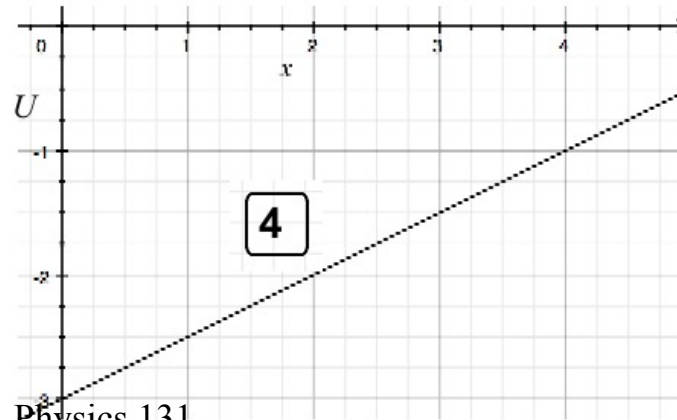
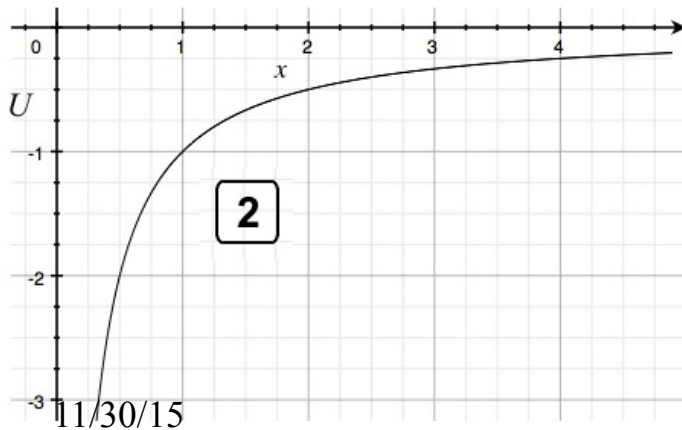
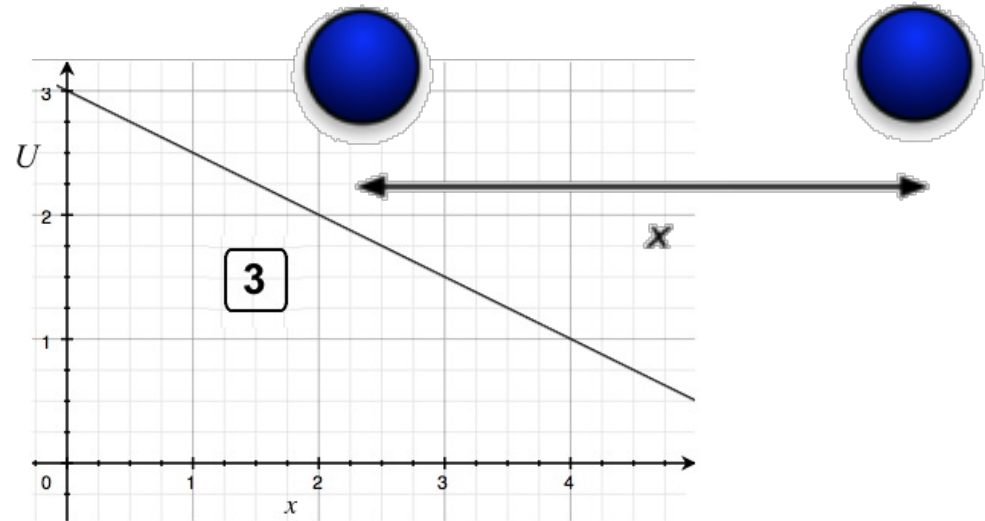
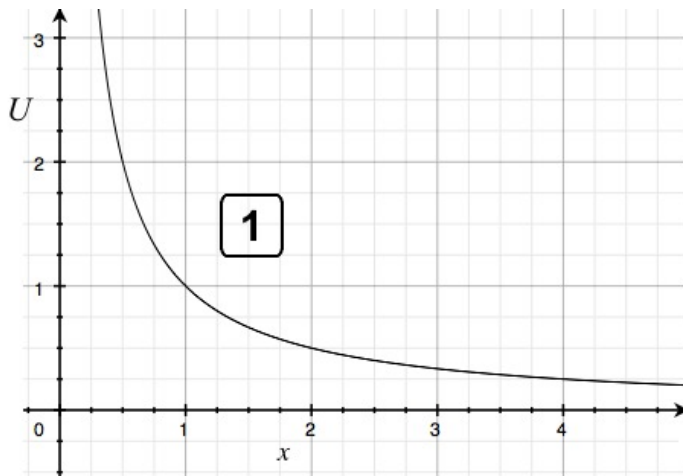


What does the electric potential energy between two identical charges look like?



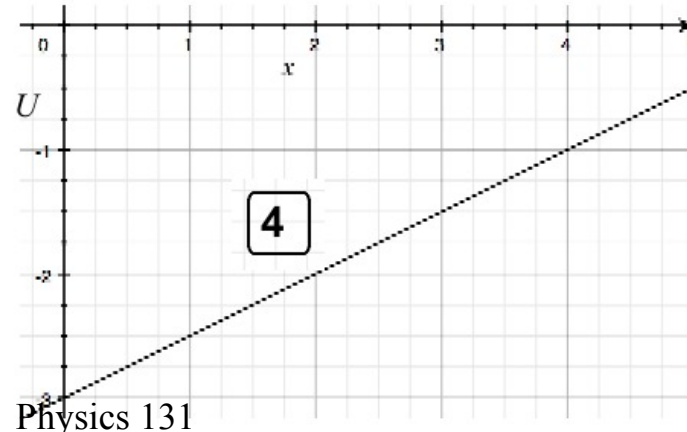
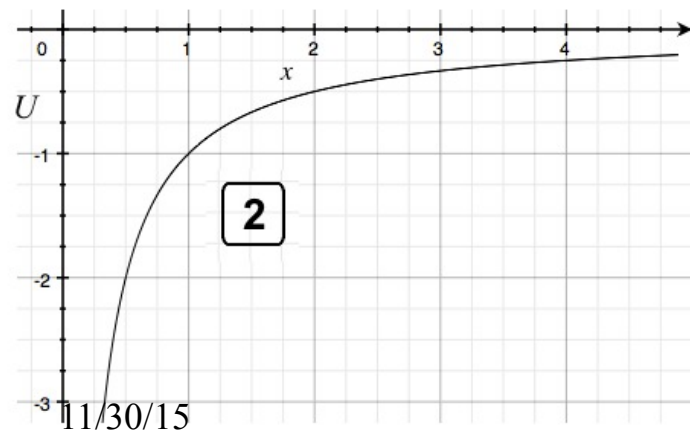
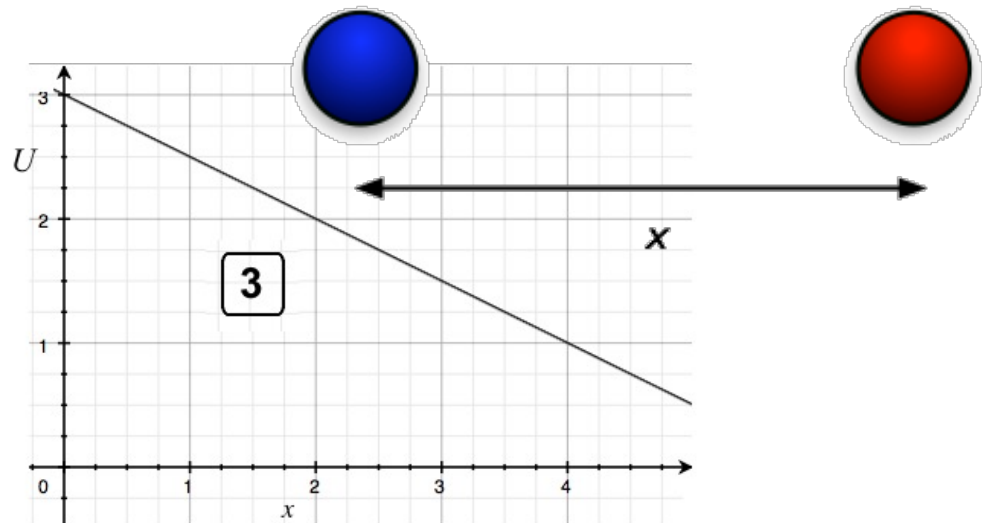
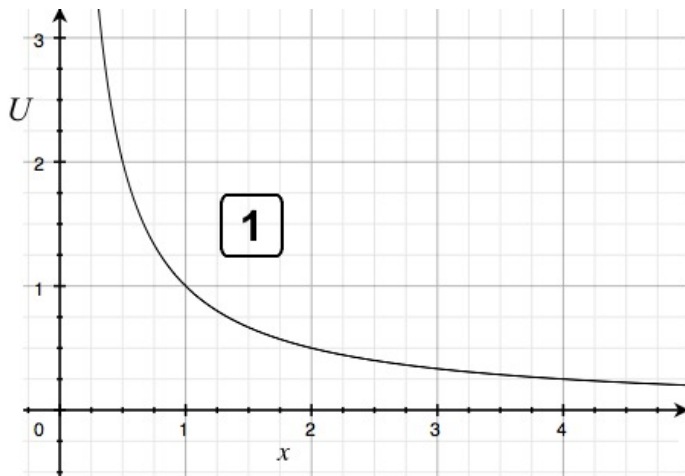
11/30/15

5. None of the above

Physics 131

6

What does the electric potential energy between two opposite charges look like?



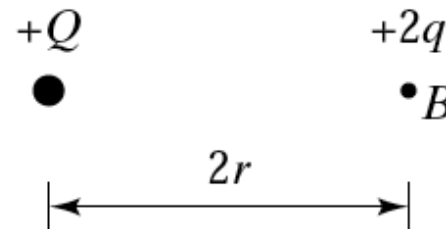
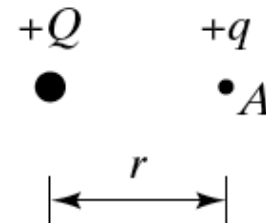
5. None of the above

Two test charges are brought separately into the vicinity of a charge $+Q$. First, test charge $+q$ is brought to point A a distance r from $+Q$.

Next, $+q$ is removed and a test charge $+2q$ is brought to point B a distance $2r$ from $+Q$.



Compared with the electrostatic potential energy of pair of charges in case A, the PE in case B is

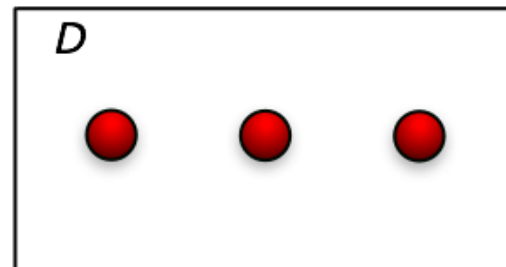
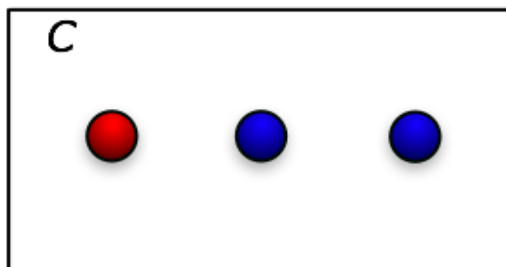
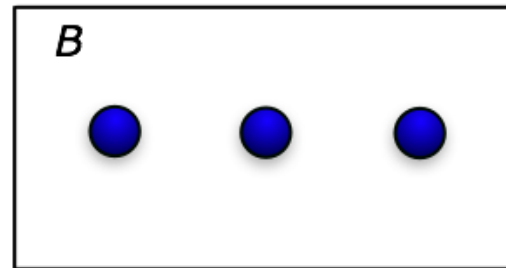
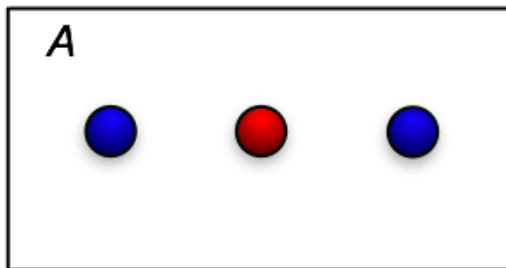
1. greater
2. smaller
3. the same
4. you can't tell from the information given





Which of these configurations has the largest electric PE?

-  charge = $+q$
-  charge = $-q$



1. A
2. B
3. C
4. D
5. A and C
6. B and D
7. other



When a positive (test) charge is released from rest near a fixed positive (source) charge what happens to the electric potential energy of the test charge?

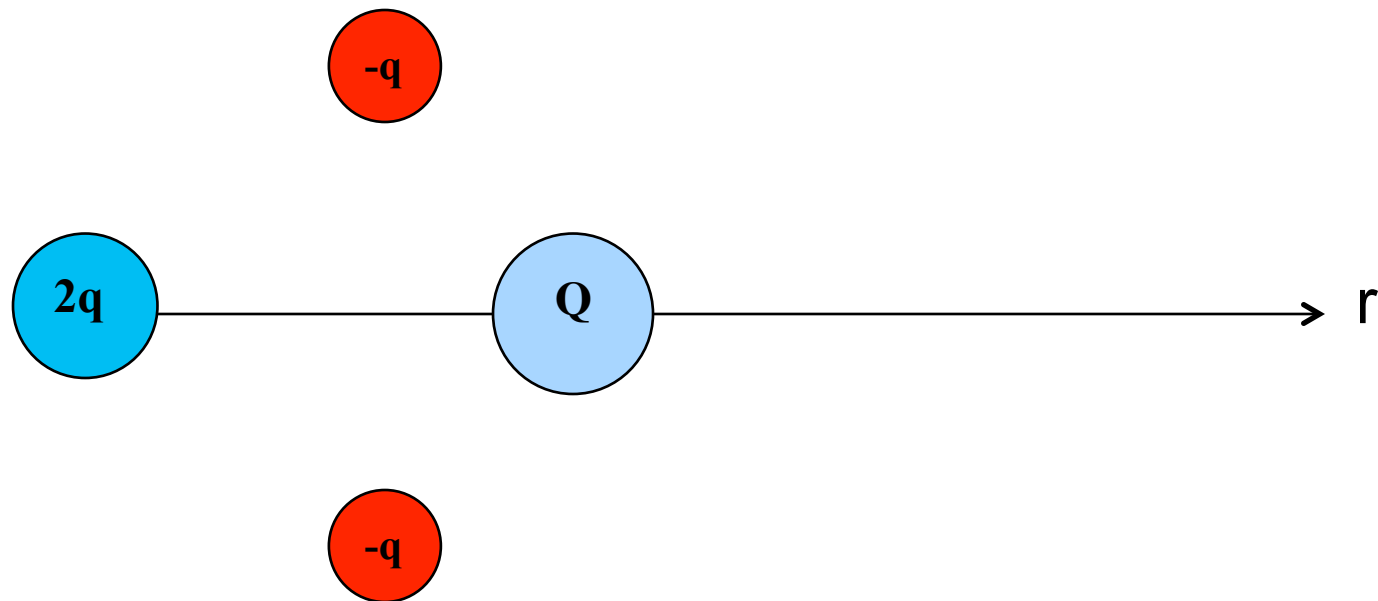
1. It will increase because the test charge will move towards the source charge.
2. It will decrease because the test charge will move away from the source charge.
3. It will increase because the test charge will move away from the source charge.
4. It will decrease because the test charge will move towards the source charge.
5. It will remain constant because the test charge remains at rest.
6. There is not enough information to tell.



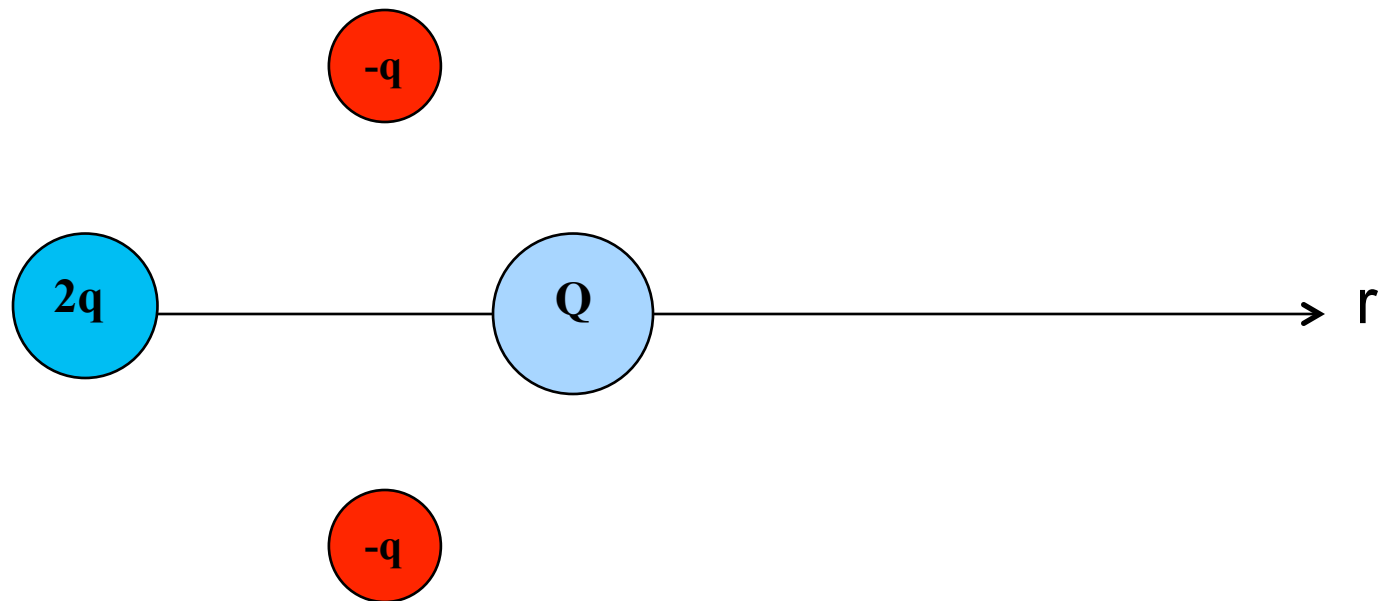
When a negative (test) charge is released from rest near a fixed positive (source) charge what happens to the electric potential energy of the test charge?

1. It will increase because the test charge will move towards the source charge.
2. It will decrease because the test charge will move away from the source charge.
3. It will increase because the test charge will move away from the source charge.
4. It will decrease because the test charge will move towards the source charge.
5. It will remain constant because the test charge remains at rest.
6. There is not enough information to tell.

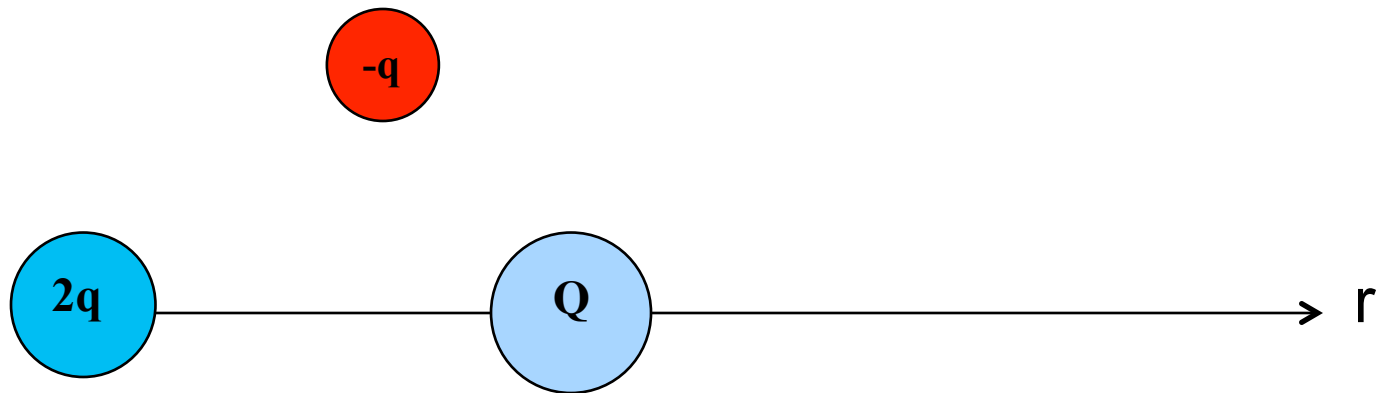
How many interactions in the system have an electric potential energy? (Equivalently: How many “ $1/r$ ” terms will we have to add up to get the total electric PE?)



How many of those potential energies change when the charge Q moves to the right?



Sketch a graph of the extra potential energy from adding Q as a function of position r of charge Q



$$\Delta U = k_C Q \sum_{i=1}^3 \frac{q_i}{r_{Q \rightarrow q_i}} = k_C Q \left(\frac{q_1}{r_1} + \frac{q_2}{r_2} + \frac{q_3}{r_3} \right)$$