PHYSICS II

Assoc.Prof. Yeşim MOĞULKOÇ

Problems

- *Problems are used from;*

University Physics, Twelfth Edition

Hugh D. Young and Roger A. Freedman

Q23.1

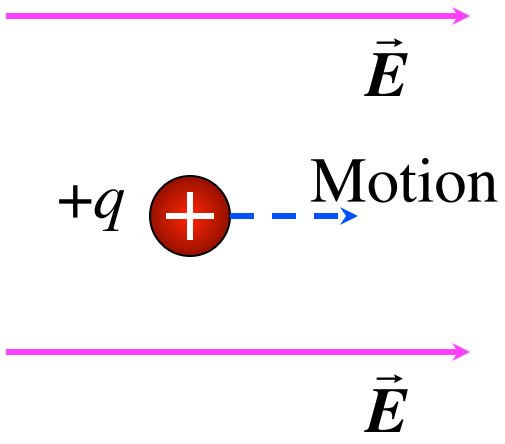
When a positive charge moves in the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

B. the field does positive work on it and the potential energy decreases.

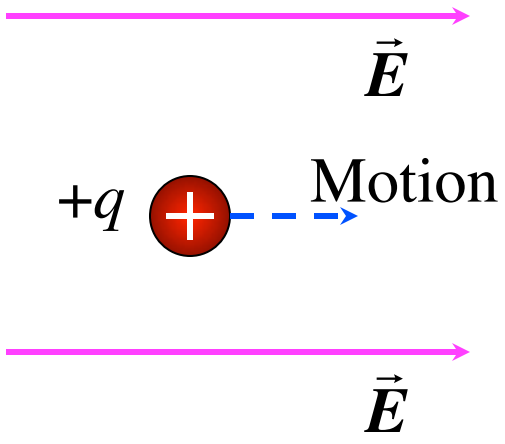
C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



A23.1

When a positive charge moves in the direction of the electric field,



A. the field does positive work on it and the potential energy increases.

✓ B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.

Q23.2

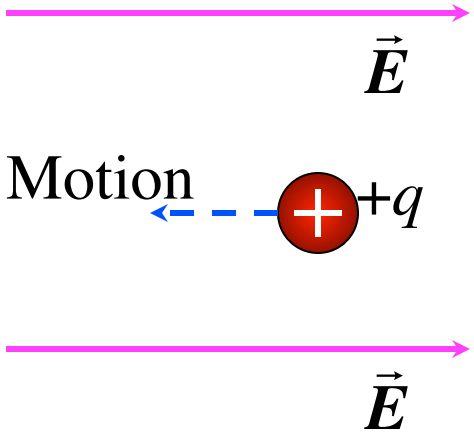
When a positive charge moves opposite to the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



A23.2

When a positive charge moves opposite to the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

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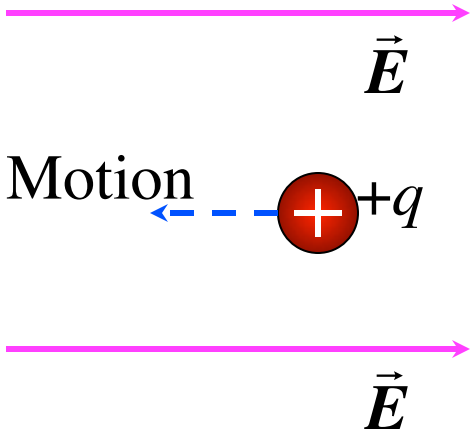
✓ C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



Q23.3

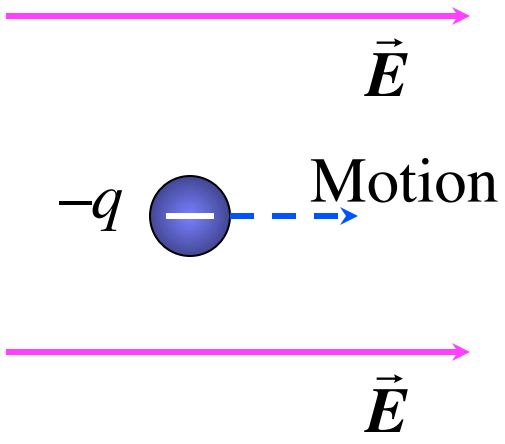
When a negative charge moves in the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

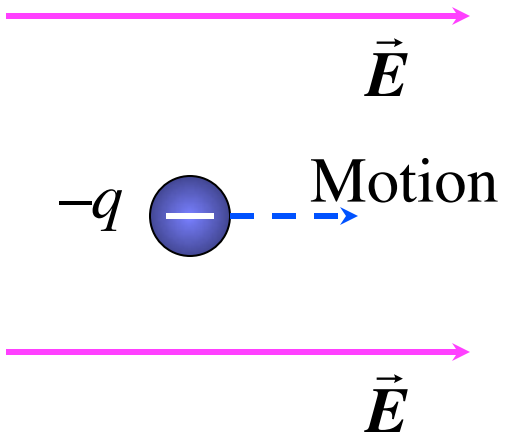
B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



A23.3



When a negative charge moves in the direction of the electric field,

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B. the field does positive work on it and the potential energy decreases.

✓ C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.

Q23.4

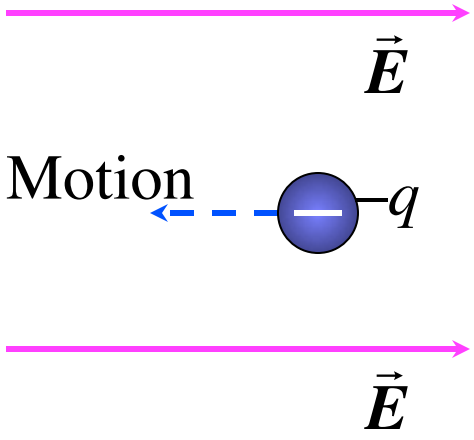
When a negative charge moves opposite to the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

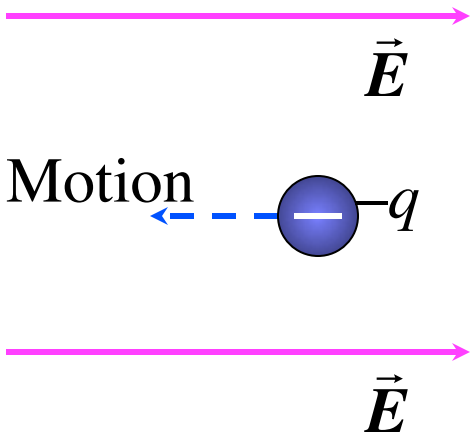
B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



A23.4



When a negative charge moves opposite to the direction of the electric field,

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C. the field does negative work on it and the potential energy increases.

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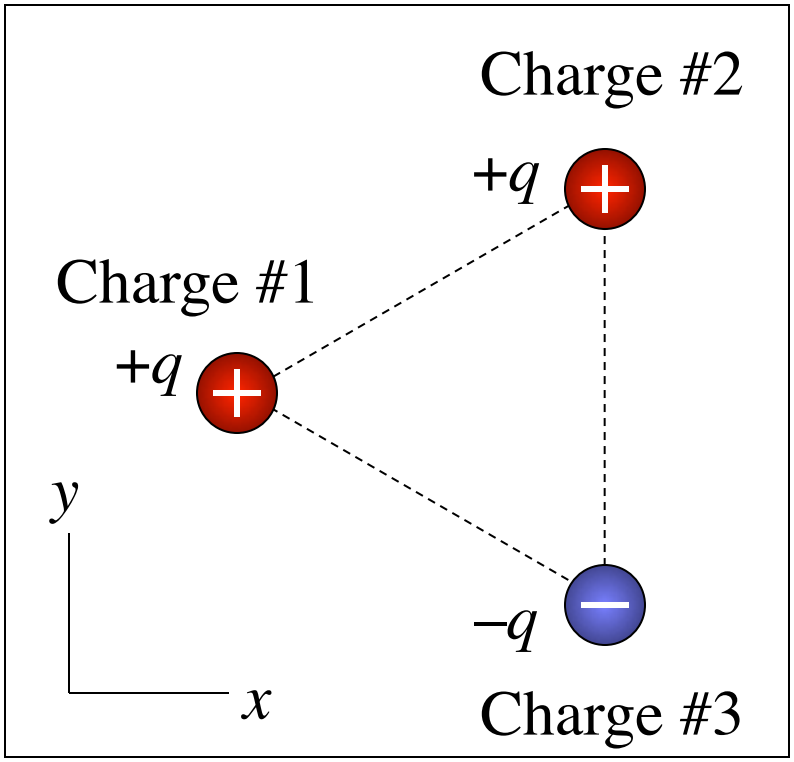
Q23.5

The electric potential energy of two point charges approaches zero as the two point charges move farther away from each other.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential energy of the system of three charges is



A. positive.

B. negative.

C. zero.

D. not enough information given to decide

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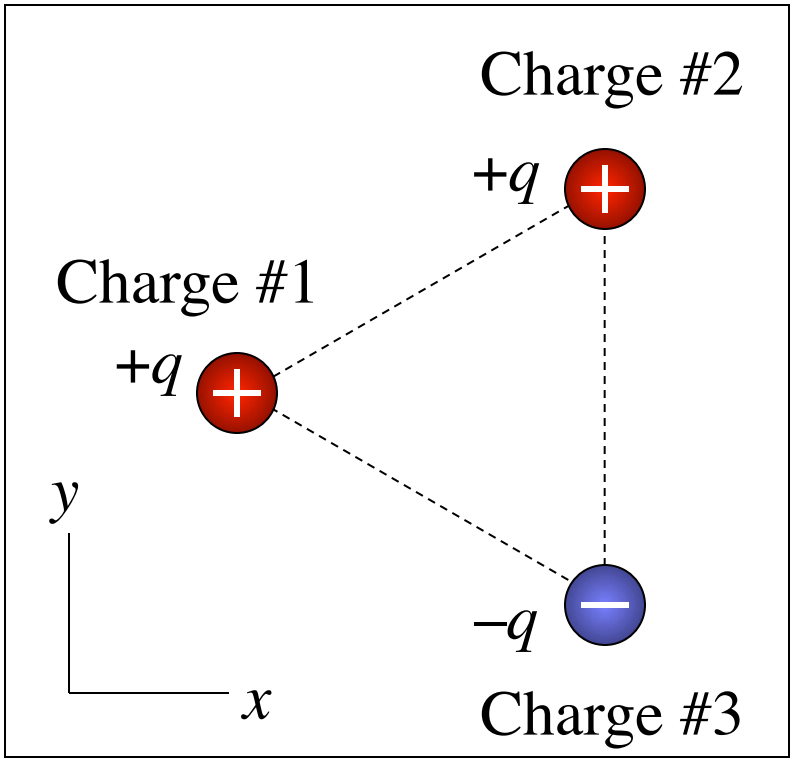

A. positive.

B. negative. ✓

C. zero.

D. not enough information given to decide

Q23.6

The electric potential energy of two point charges approaches zero as the two point charges move farther away from each other.

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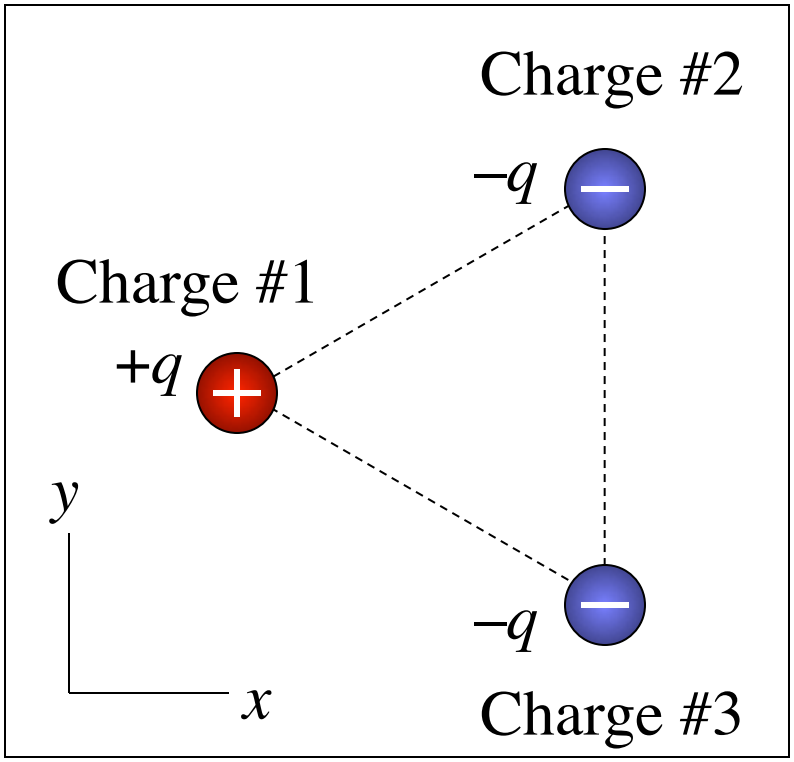

A. positive.

B. negative.

C. zero.

D. not enough information given to decide

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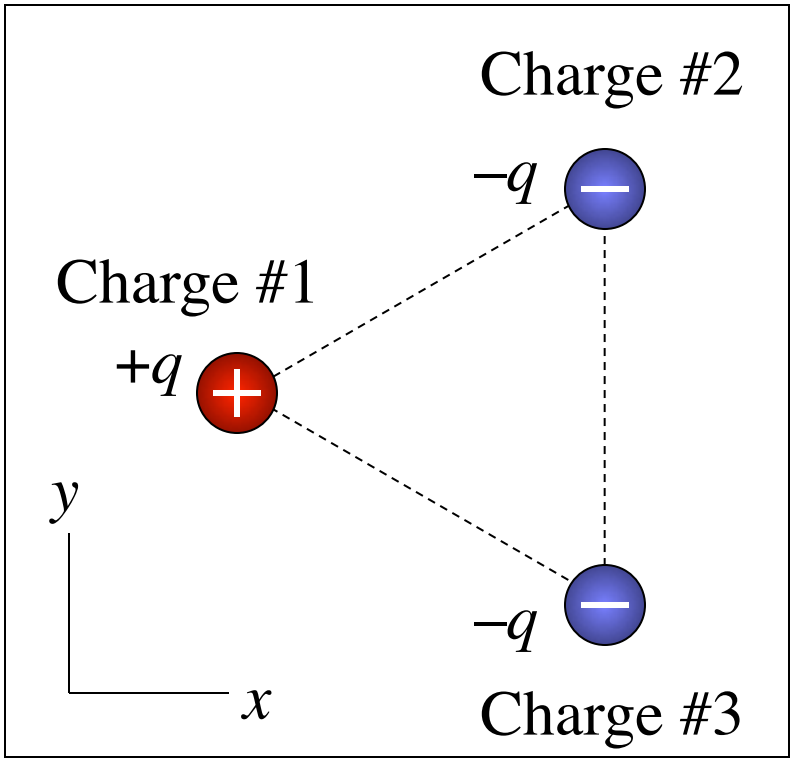


A. positive.

B. negative. ✓

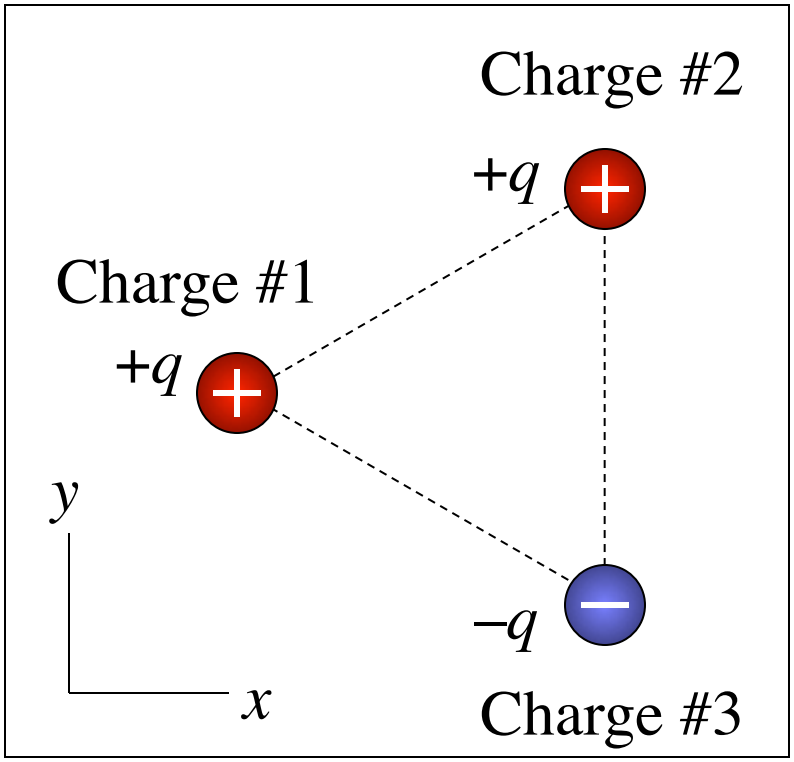
C. zero.

D. not enough information given to decide

Q23.7

The electric potential due to a point charge approaches zero as you move farther away from the charge.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential at the center of the triangle is



A. positive.

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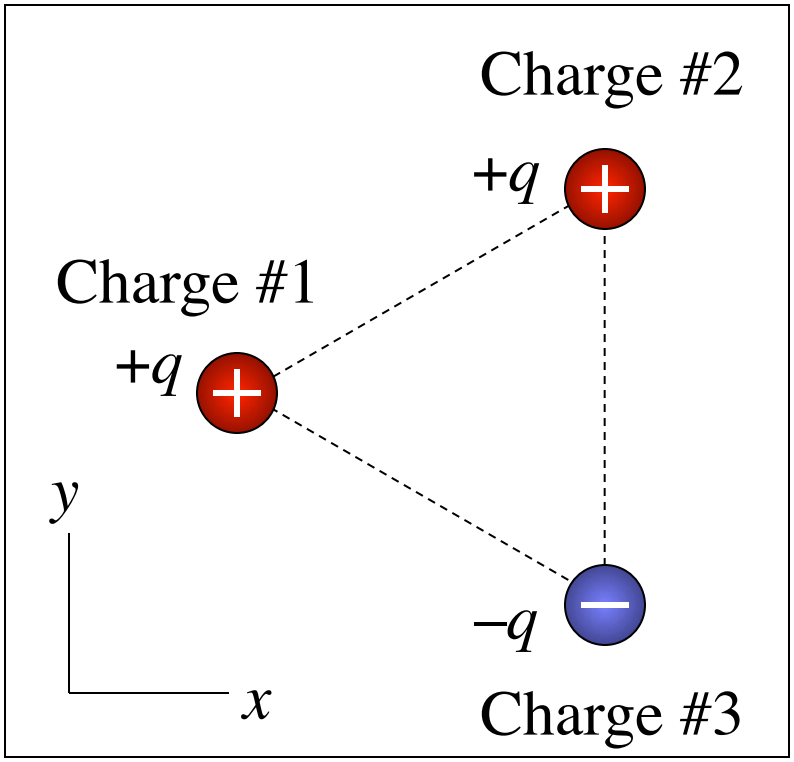


A. positive.

B. negative.

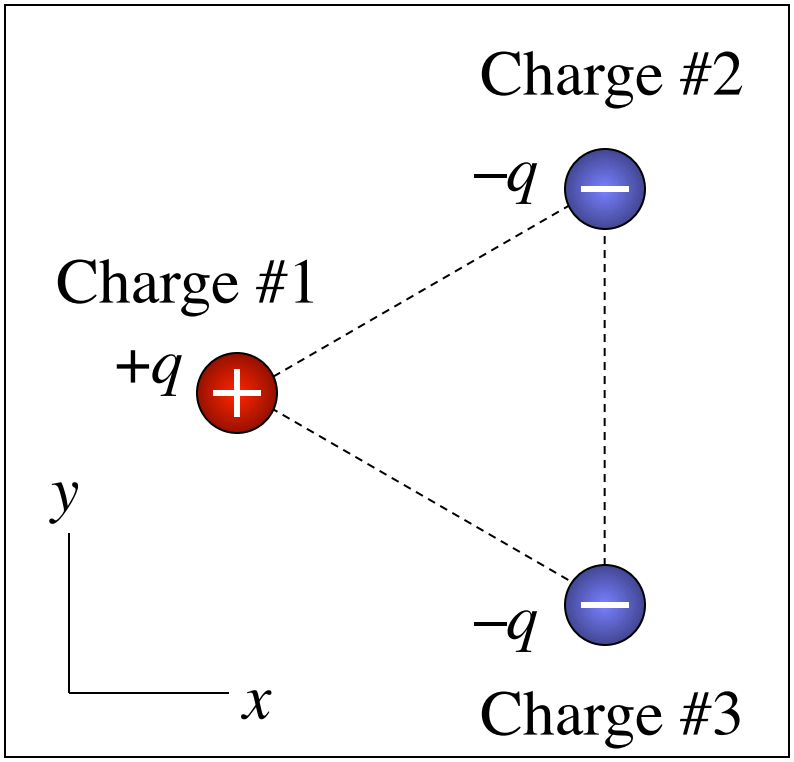
C. zero.

D. not enough information given to decide

Q23.8

The electric potential due to a point charge approaches zero as you move farther away from the charge.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential at the center of the triangle is



A. positive.

B. negative.

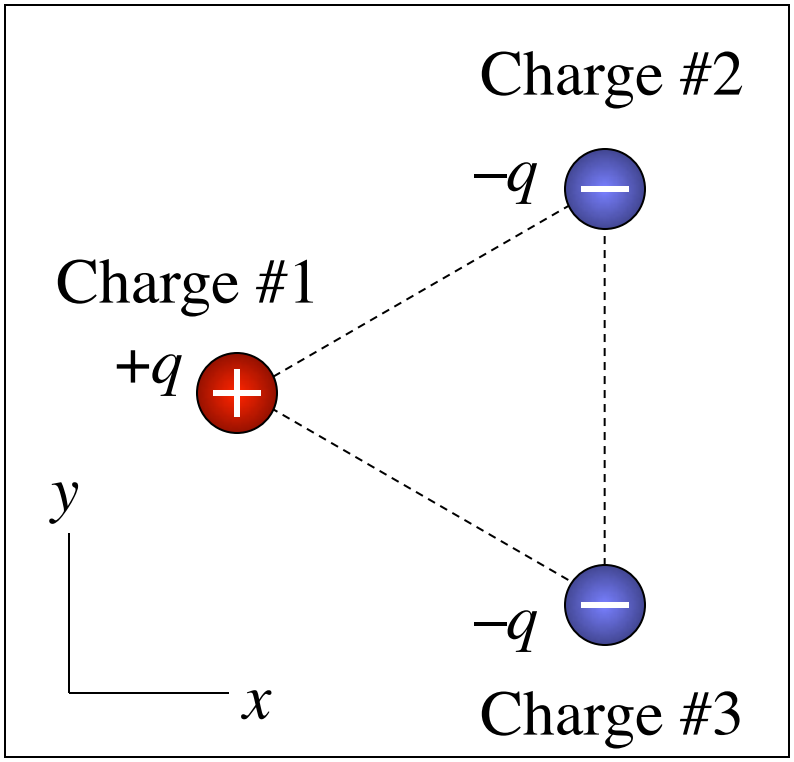
C. zero.

D. not enough information given to decide

A23.8

The electric potential due to a point charge approaches zero as you move farther away from the charge.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential at the center of the triangle is



A. positive.

B. negative. ✓

C. zero.

D. not enough information given to decide

Q23.9

Consider a point *P* in space where the electric potential is zero. Which statement is correct?

A. A point charge placed at *P* would feel no electric force.

B. The electric field at points around *P* is directed toward *P*.

C. The electric field at points around *P* is directed away from *P*.

D. none of the above

E. not enough information given to decide

A23.9

Consider a point *P* in space where the electric potential is zero. Which statement is correct?

A. A point charge placed at *P* would feel no electric force.

B. The electric field at points around *P* is directed toward *P*.

C. The electric field at points around *P* is directed away from *P*.

D. none of the above

E. not enough information given to decide

Q23.10

Where an electric field line crosses an equipotential surface, the angle between the field line and the equipotential is

A. zero.

B. between zero and 90°.

C. 90°.

D. not enough information given to decide

A23.10

Where an electric field line crosses an equipotential surface, the angle between the field line and the equipotential is

A. zero.

B. between zero and 90°.

C. 90°.

D. not enough information given to decide

Q23.11

The direction of the electric potential gradient at a certain point

A. is the same as the direction of the electric field at that point.

B. is opposite to the direction of the electric field at that point.

C. is perpendicular to the direction of the electric field at that point.

D. not enough information given to decide

A23.11

The direction of the electric potential gradient at a certain point

A. is the same as the direction of the electric field at that point.

B. is opposite to the direction of the electric field at that point.

C. is perpendicular to the direction of the electric field at that point.

D. not enough information given to decide