Q23.1

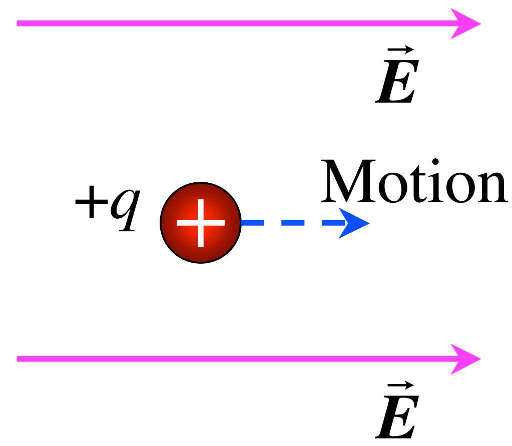
When a positive charge moves in the direction of the electric field,

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.

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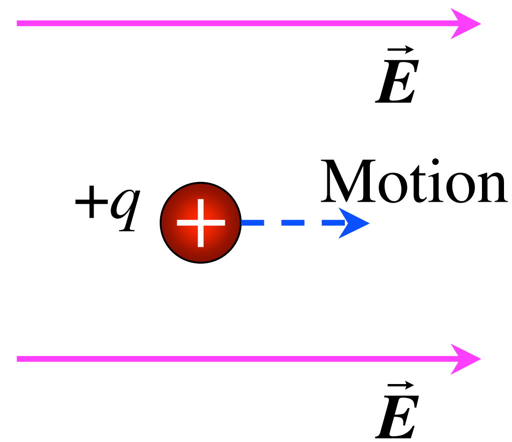
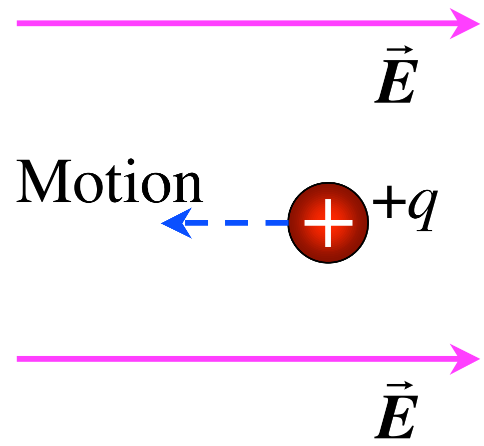


Q23.2

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

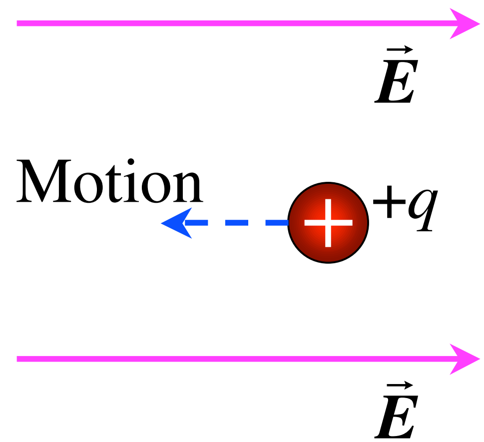
When a positive charge moves opposite to the direction of the electric field,

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

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.



Q23.3

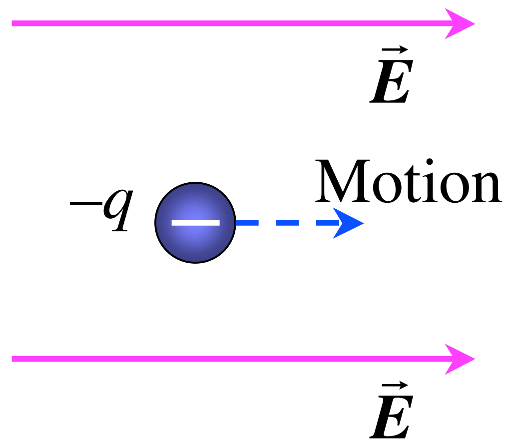
When a negative charge moves in the direction of the electric field,

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

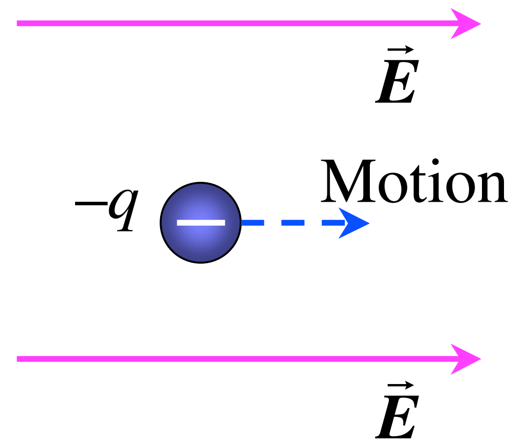
When a negative charge moves in the direction of the electric field,

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.

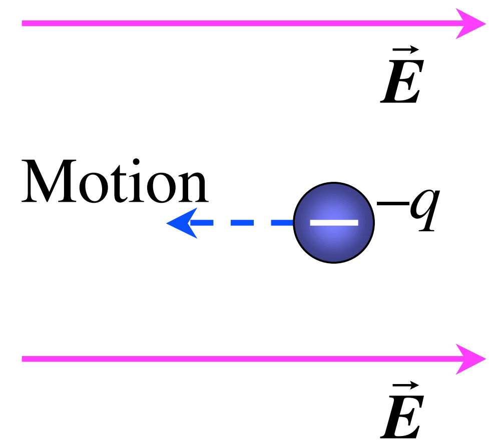
✓ C. the field does negative work on it and the potential energy increases.

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



Q23.4

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

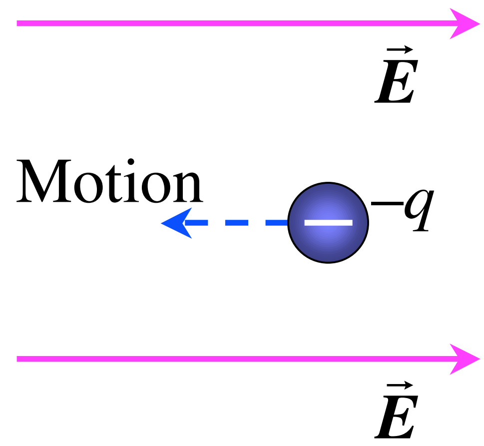
When a negative charge moves opposite to the direction of the electric field,

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.

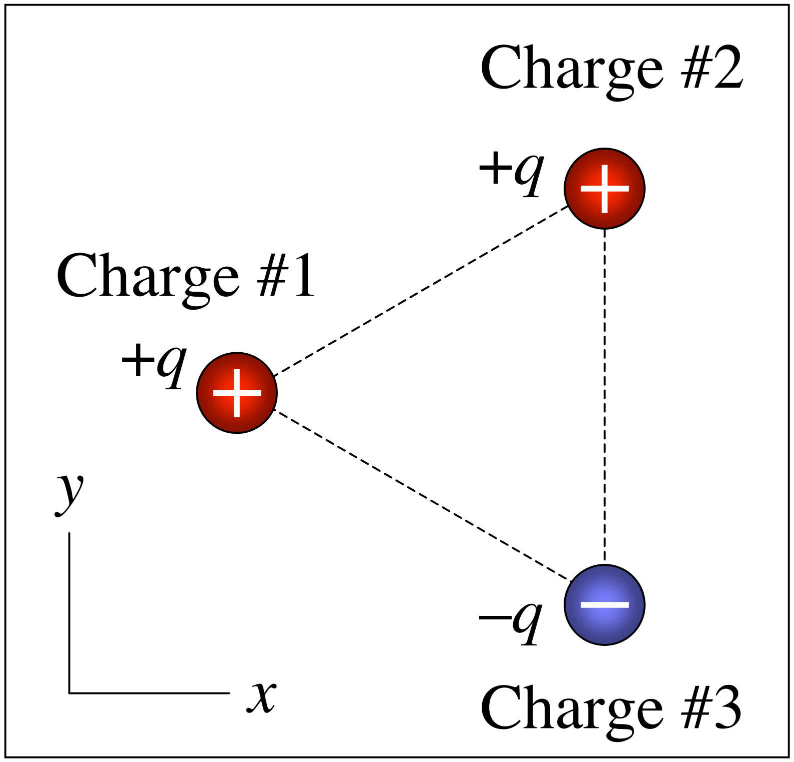
C. the field does negative work on it and the potential energy increases.

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



Q23.5

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



A. positive.

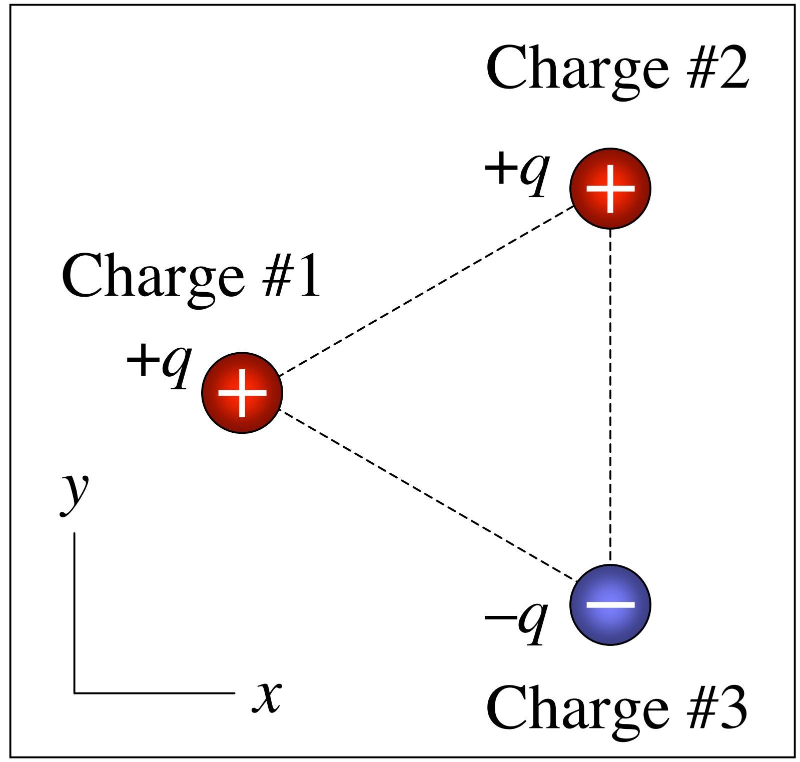
B. negative.

C. zero.

D. not enough information given to decide

A23.5

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



A. positive.

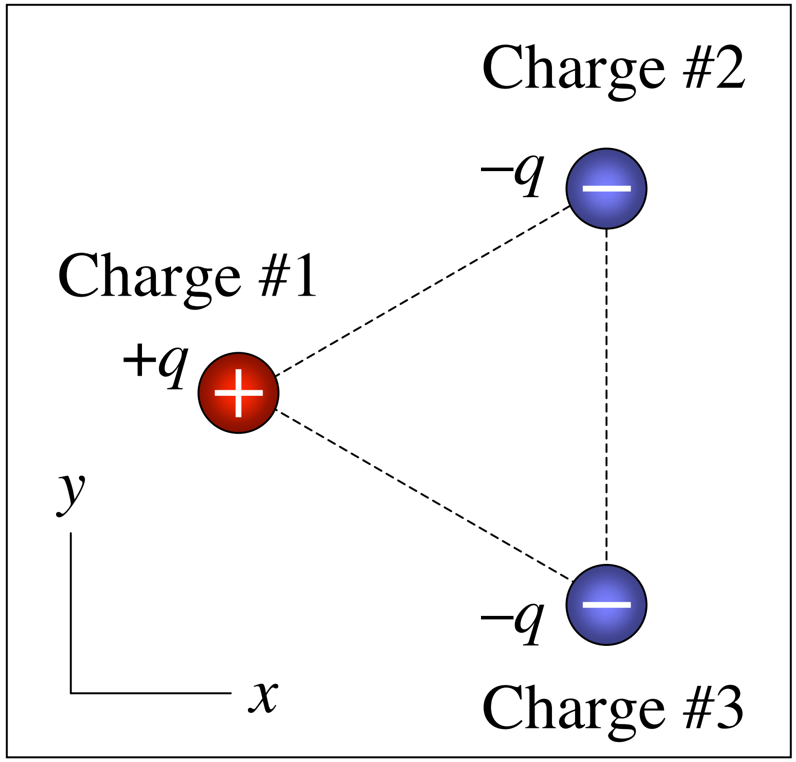
✓ B. negative.

C. zero.

D. not enough information given to decide

Q23.6

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.

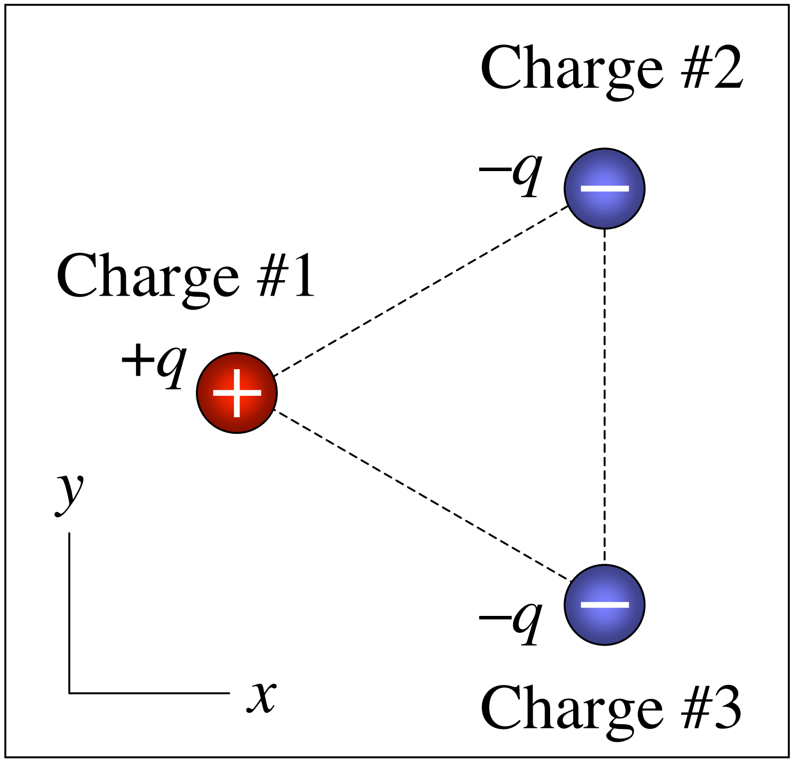
B. negative.

C. zero.

D. not enough information given to decide

A23.6

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.

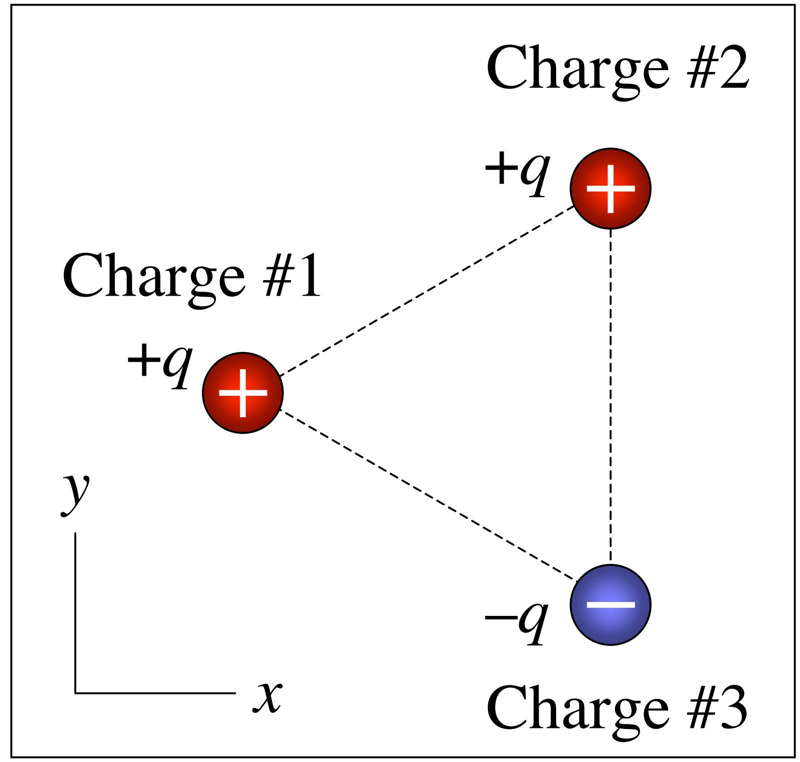
B. negative.

C. zero.

D. not enough information given to decide

Q23.7

Three point charges shown here lie at the vertices of an equilateral triangle, ***the electrostatic potential at the center of the triangle*** is



A. positive.

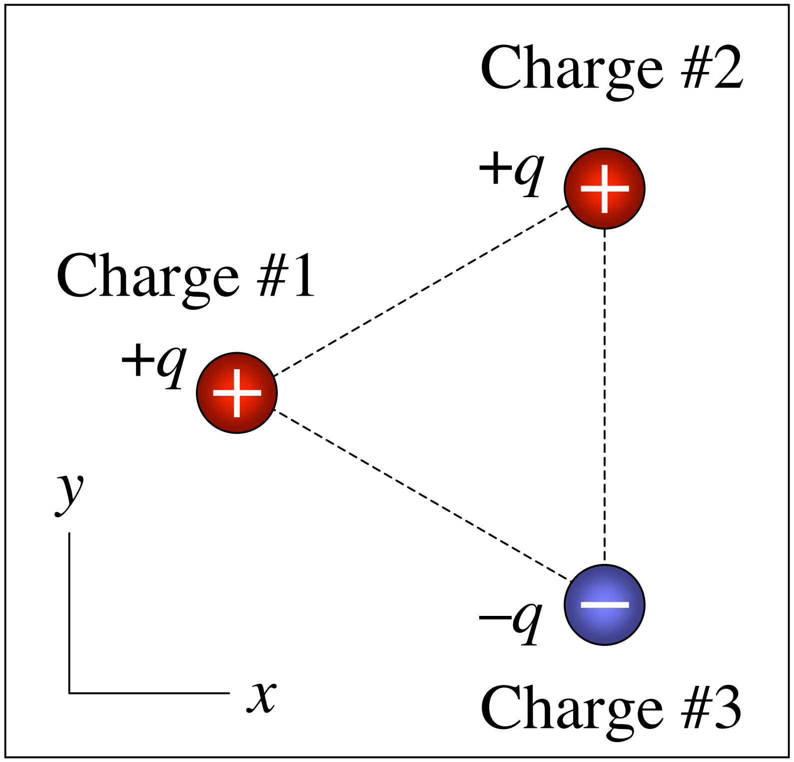
B. negative.

C. zero.

D. not enough information given to decide

A23.7

Three point charges shown here lie at the vertices of an equilateral triangle, ***the electrostatic potential at the center of the triangle*** is



✓ A. positive.

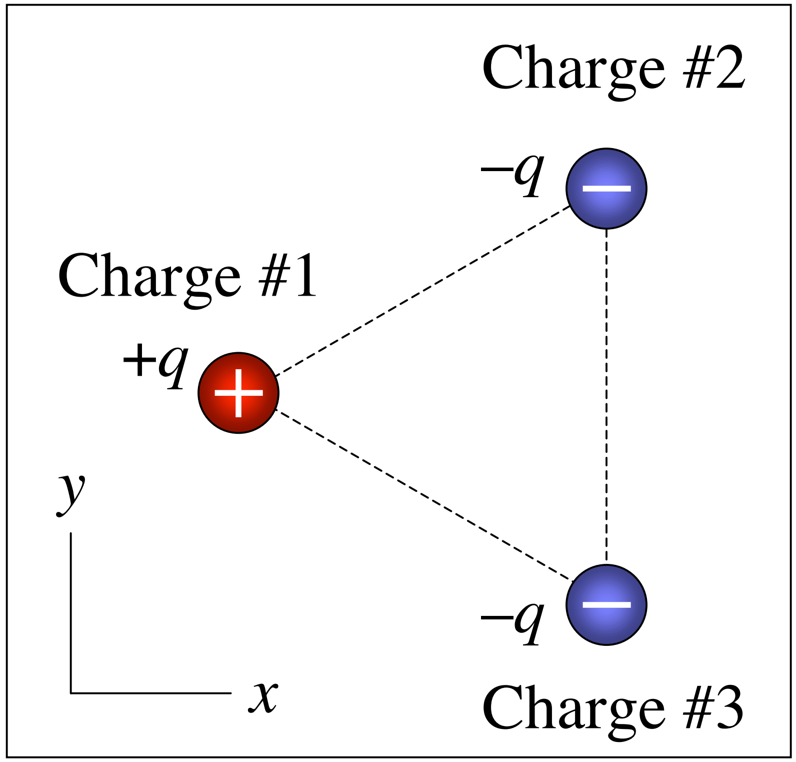
B. negative.

C. zero.

D. not enough information given to decide

Q23.8

Three point charges shown here lie at the vertices of an equilateral triangle, ***the electrostatic potential at the center of the triangle*** is



A. positive.

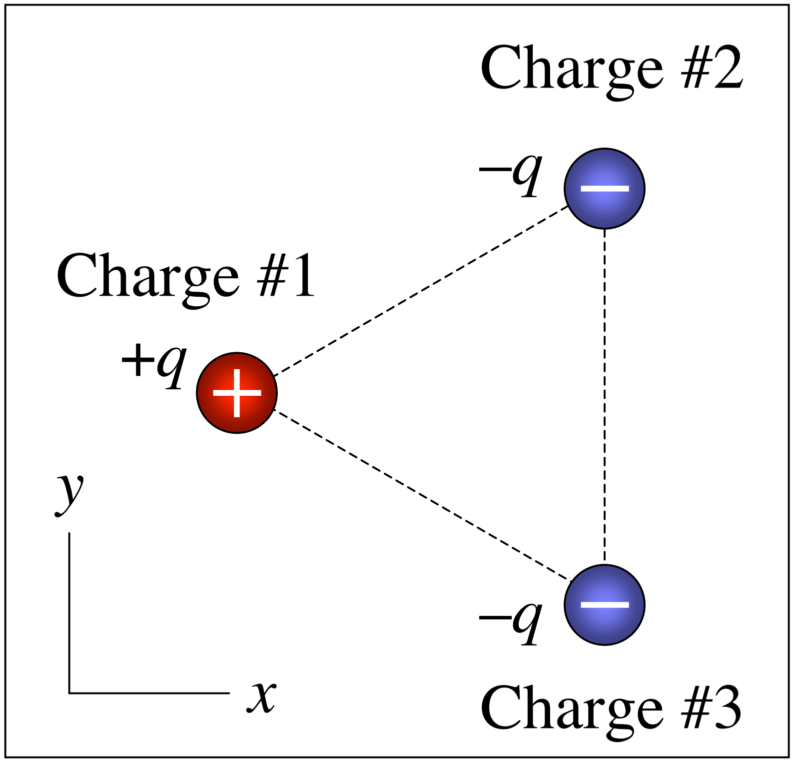
B. negative.

C. zero.

D. not enough information given to decide

A23.8

Three point charges shown here lie at the vertices of an equilateral triangle, ***the electrostatic 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. A point charge placed at P will not alter the electrostatic potential energy of the system.

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. A point charge placed at *P* will not alter the electrostatic potential energy of the system.

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 electrostatic 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 electrostatic 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