

4. Quiz

Some questions might have more than one correct answer.

- The magnitude of a particle's displacement during an interval might be greater than the distance traveled during that interval
 - might be less than the distance traveled during that interval
 - might be equal to the distance traveled during that interval
 - must be equal to the distance traveled during that interval
 - might be the negative of the distance traveled during that interval
- A graph of a particle's velocity component versus time can be used to find the position of a particle at the end of an interval if
 - the coordinate at the beginning of the interval is known
 - the velocity at the beginning of the interval is known
 - the coordinate at the end of the interval is known
 - nothing else is known
 - the acceleration is known for every time in the interval
- If the velocity component of a particle moving on the x axis is positive,
 - it is traveling from left to right
 - it is traveling from right to left
 - its coordinate is positive
 - its coordinate is negative
 - it is traveling in the positive x direction
- If the acceleration component of a particle moving on the x axis is negative

- (a) its speed is decreasing
 - (b) its speed is increasing
 - (c) its speed might be increasing or decreasing
 - (d) its speed is not changing
 - (e) its speed must be a maximum
5. Which of the following quantities can be found from a graph of the velocity component versus time for a particle moving along a straight line? (No other information is known.)
- (a) its displacement during any interval
 - (b) its average velocity for any interval
 - (c) its average acceleration for any interval
 - (d) its acceleration at any instant
 - (e) its position at any instant
6. During any sufficiently long interval in which a particle moves along a straight line with constant (nonzero) acceleration
- (a) its velocity cannot be zero
 - (b) its velocity can be zero, but at only one instant of time
 - (c) its velocity can be zero at several instants of time
 - (d) its speed must eventually increase
 - (e) it might stop and remain stopped
7. Two particles start at point P and end at another point Q but the average velocity of particle B is much greater than the average velocity of particle A. We must conclude that
- (a) particle B traveled a greater distance than particle A
 - (b) at each instant the speed of particle B was greater than the speed of particle A

- (c) the speed of particle B was greater than the speed of particle A for at least part of the trip
- (d) the acceleration of particle B was greater than the acceleration of particle A
- (e) particle B took a shorter time to make the trip than particle A
8. The equations for motion with constant acceleration ($\vec{x}_2 - \vec{x}_1 = \vec{v}_1(t_2 - t_1) + \frac{1}{2}\vec{a}(t_2 - t_1)^2$ and $\vec{v}_2 = \vec{v}_1 + \vec{a}(t_2 - t_1)$) can be used to find
- (a) the velocity \vec{v}_2 and position \vec{x}_2 if all other quantities are given
- (b) the velocity \vec{v}_2 , position \vec{x}_2 , and time t_2 if all other quantities are given
- (c) the acceleration \vec{a} and the position \vec{x}_2 if all other quantities are given
- (d) the acceleration \vec{a} , the position \vec{x} , and the velocity \vec{v}_1 if all other quantities are given
- (e) the position \vec{x}_1 and the velocity \vec{v}_1 if all other quantities are given
9. Which of the following statements are true?
- (a) a particle cannot have a velocity that is greater than the product of its acceleration and the time it has been traveling
- (b) if a particle's velocity is zero at an instant then its acceleration must be zero at that instant
- (c) the faster a particle moves the greater its acceleration must be
- (d) the average velocity for any interval must equal the instantaneous velocity at some instant in the interval
- (e) none of the above
10. Which of the following statements are true for a particle that is moving with constant acceleration?
- (a) it cannot have a velocity of zero at any instant
- (b) its direction of motion cannot reverse
- (c) for any interval the distance it travels must equal the magnitude of its displacement
- (d) its speed is greater at the end of end interval than at the beginning

(e) none of the above

Answers: (1) B, C; (2) A, C; (3) E; (4) C; (5) A, B, C, D; (6) B, D; (7) E; (8) A, B, C, E; (9) D; (10) E

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