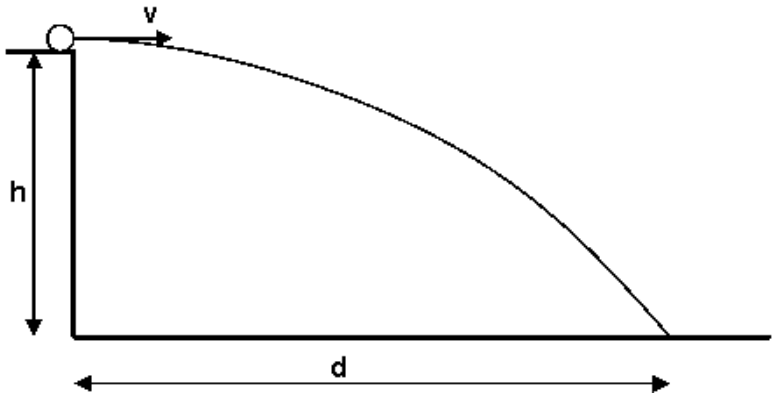
Kinematics

1. A graduation hat is thrown vertically with a speed of 5m/s. How long does it take the hat to reach maximum height?
   a) t = .2s
   b) t = .5s
   c) t = .8s
   d) t = 1s
   e) t = 2s

2. A soccer ball is kicked with an horizontal speed v = 10m/s from the height h = 20m, as shown in the figure below. Calculate the time passed from the moment the ball has an horizontal speed until the moment it touches the ground.



   a) t = .2s
   b) t = .5s
   c) t = .8s
   d) t = 1s
   e) t = 2s

3. Calculate distance d from the problem above.
   a) d = 10m
   b) d = 15m
   c) d = 20m
   d) d = 25m
   e) d = 30m

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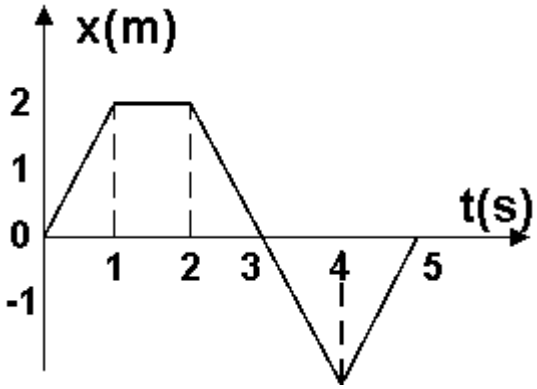
4. The movement of a particle along the axis x is characterized by the graph below. What is the speed of the particle at t = 3s?

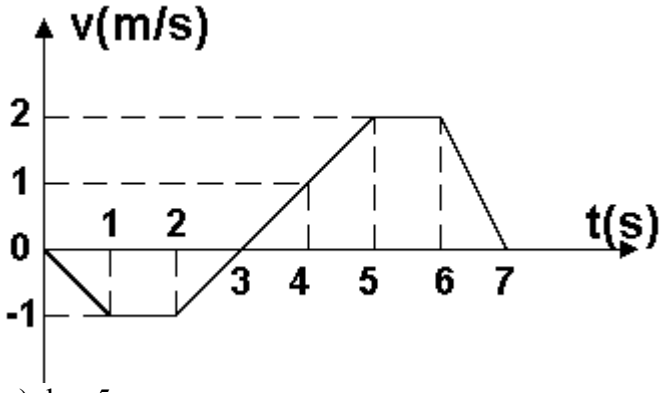


a) v = 0m/s
b) v = 1m/s
c) v = -1m/s
d) v = 2m/s
e) v = -2m/s

5. A car travels a distance d with an average speed v_1. The velocity of the car during this trip is v_2 and the maximum instantaneous speed of the trip is v_3. Which of the following statements must be true?

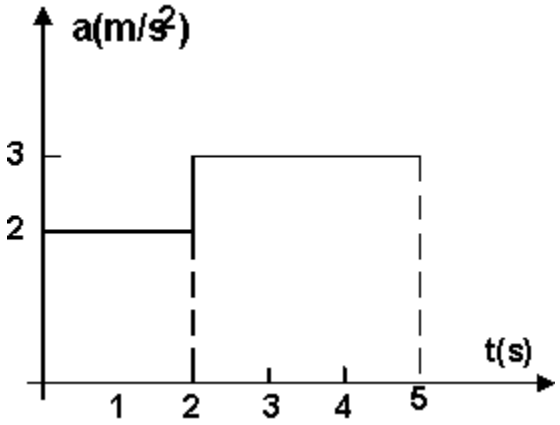
a) $v_2 < v_1 \leq v_3$
b) $v_2 \leq v_1 \leq v_3$
c) $v_1 \leq v_2 \leq v_3$
d) $v_3 \leq v_1 \leq v_2$

6. Calculate the displacement between t = 2s and t = 5s of an object that moves along an axis and has the speed characterized below.



a) d = .5m
b) d = 1m
c) d = 1.5m
d) d = 2m
e) d = 2.5m

7.



The graph above shows the acceleration of a particle. At t = 0s, the speed of the particle is 1m/s. What is the speed of the particle at t = 4s?

a) 6m/s
b) 10m/s
c) 11m/s
d) 12m/s
e) 15m/s

Solutions:

Question #1: b
Question #2: e
Question #3: c
Question #4: e
Question #5: b
Question #6: c
Question #7: c