Started on	Friday, 11 March 2022, 10:04 AM
State	Finished
Completed on	Friday, 11 March 2022, 10:06 AM
Time taken	2 mins 23 secs
Marks	9.00/9.00
Grade	**100.00** out of 100.00

Information

In the three cases described below, a particle travels in the positive s direction with its velocity v being given as a function of position s. At t = 0, the particle is at $s = s_0 (>0)$. In each of the following cases, for t > 0, **determine whether the acceleration is constant, increasing, or decreasing, with time**.

Question 1

Complete

Mark 1.00 out of 1.00

In the case of v = 2s, for t > 0, determine whether the acceleration is constant, increasing, or decreasing, with time.

Acceleration is...

a. constant cross out

b. can not be determined cross out

c. increasing cross out

d. decreasing cross out

Question 2

Complete

Mark 1.00 out of 1.00

In the case of $v = s^2$, for $t > 0$, determine whether the acceleration is constant, increasing, or decreasing, with time.

Acceleration is...

- a. increasing cross out
- b. constant cross out
- c. decreasing cross out
- d. can not be determined cross out

Question 3

Complete

Mark 1.00 out of 1.00

In the case of $v = s^{1/2}$, for $t > 0$, determine whether the acceleration is constant, increasing, or decreasing, with time.

Acceleration is...

- a. cannot be determined cross out
- b. constant cross out
- c. decreasing cross out
- d. increasing cross out

Question 4

Complete

Mark 1.00 out of 1.00

A particle is moving on a circular path of radius 0.089 km, has an instantaneous velocity of 26 m/s and its velocity is decreasing at a constant rate of 8 m/s^2. What is the magnitude of the particle's total acceleration at this instant (in m/s^2)?

- A. 8.46 cross out
- B. 11.0 cross out
- C. 15.6 cross out
- D. 3.95 cross out

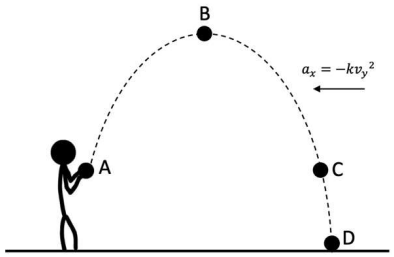
Question 5

Complete

Mark 1.00 out of 1.00

In a simulation involving projectiles, a ball is thrown with an initial velocity through a magical medium with a peculiar quality: air resistance is not negligible and it creates an acceleration in the horizontal direction (a_x) that is related to the velocity in the vertical direction (v_y) by the equation $a_x=-kv_y^2$ with k being a positive constant. The following figure represents the motion of the ball in the simulation and points A, B, C and D represent the point of release, the apex, the point at which the ball returns to it's initial height and the point right before impact, respectively. For this simulation, you are required to answer some questions about the motion of the ball.

At which points does the ball have the same total acceleration?



a. B and C cross out

b. A and C cross out

c. B and D cross out

d. A and B cross out

e. C and D cross out

Question 6

Complete

Mark 1.00 out of 1.00

For the problem shown above, at which point does the ball have the maximum acceleration?

a. C cross out

b. A cross out

c. D cross out

d. B cross out

e. None of these points cross out

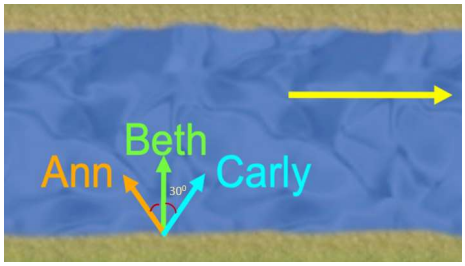
Question 7

Complete

Mark 1.00 out of 1.00

In still water, three swimmers, Ann, Beth and Carly can swim at 0.6 m/s, 0.4 m/s and 0.5 m/s, respectively. They have a competition to see who can swim across a river in the least amount of time. Relative to the water, which flows at a constant speed to the right as shown by the arrow, Beth swims perpendicular to the flow, Ann swims upstream at 30 degrees, and Carly swims downstream at 30 degrees.

Who gets across the river first?



- a. Beth cross out
- b. Ann cross out
- c. can not be determined cross out
- d. Carly cross out

Question 8

Complete

Mark 1.00 out of 1.00

For the problem shown above, who will take the longest time?

- a. Ann cross out
- b. can not be determined cross out
- c. Carly cross out
- d. Beth cross out

Question 9

Complete

Mark 1.00 out of 1.00

Are you ready to submit your conceptual questions (Part 1) and proceed to the problem solving questions (Part 2)?

You will receive one point if the answer is yes.

You **MUST click submit on the NEXT PAGE** to finish Part 1, before you will be allowed to begin Part 2. After submitting, you will NOT be able to return to Part 1.

- (•) yes cross out
- ( ) no cross out

◄ Alternate Midterm Exam Part Two: Problem solving questions

Jump to...

Midterm Exam Part Two: Problem solving questions ►