online Homework physics kinetic BOOKS

Welcome back, Bill Wiecking

>>Working in AP Physics B (SC651)

Current Course
Course Home
Edit Course Info
Syllabus/Assignments
Grades
Student administration
Instructor administration

My Courses
AP Physics B
AP Physics C
Honors Physics
ePhysicsC
ePhysicsE

My Account
Change password
Manage courses

Homework Home
Logout

Chapter 2 2.1-2.8

Motion

Chapter 2: Motion in One Dimension

Section 0: Introduction

2.0.1 (7.00) Use the simulation in the interactive problem in Section 2.0 to answer the following question. What kind of acceleration will cause the hare to change directions?

Section 2: Displacement

2.2.1 (5.00) A photographer wants to take a picture of a particularly interesting flower, but he is not sure how far away to place his camera. He takes three steps forward, four back, seven forward, then five back. Finally, he takes the photo. As measured in steps, what was his displacement? Assume the forward direction is positive.

step(s)

Section 3: Velocity

2.3.2 (5.00) A jogger is moving at a constant velocity of +3.0 m/s directly towards a traffic light that is 100 meters away. If the traffic light is at the origin, x = 0 m, what is her position after running 20 seconds?

m

Section 4: Average velocity

2.4.3 (5.00) You are driving in one direction on a long straight road. You drive in the positive direction at 126 km/h for 30.0 minutes, at which time you see a police car with someone pulled over, presumably for speeding. You then drive in the same direction at 100 km/h for 45.0 minutes. (a) How far did you drive? (b) What was your average velocity in kilometers per hour?

(a) _____ km

(b) _____ km/h

2.4.6 **(7.00)** A horse is capable of moving at four different speeds: walk (1.9 m/s), trot (5.0 m/s), canter (7.0 m/s), and gallop (12 m/s). Ann is learning how to ride a horse. She spends 15 minutes riding at a walk and *t* minutes at each other speed. If she traveled the whole way in the positive direction, what was her average velocity over the trip?

_____ m/s

Section 5: Instantaneous velocity

2.5.4 **(7.00)** Two boats are initially separated by distance *d* and head directly toward one another. The skippers of the boats want to arrive at the same time at the point that is halfway between their starting points. Boat 1 moves at a speed *v* and boat 2 moves at twice the speed of boat 1. Because it moves faster, boat 2 starts at time *t* later than boat 1. The skippers want to know how much later boat 2 should start than boat 1. Provide them with an equation for *t* in terms of *d* and *v*.

- ○ $t = d/4v$
- ○ $t = 3d/2v$
- ○ $t = 3d/4v$
- ○ $t = d/2v$

Section 6: Position-time graph and velocity

2.6.1 **(5.00)** A fish swims north at 0.25 m/s for 3.0 seconds, stops for 2.0 seconds, and then swims south at 0.50 m/s for 4.0 seconds. Draw a position-time graph of the fish's motion, using north as the positive direction.

Submit answer on paper.

Section 8: Interactive problem: match a graph using velocity

2.8.1 **(5.00)** Use the information given in the interactive problem in Section 2.8 to answer the following questions. What is the velocity of the ball from (a) 0 to 3.0 seconds, (b) 3.0 to 7.0 seconds, and (c) 7.0 to 10.0 seconds needed to match the graph? Test your answer using the simulation.

(a) _____ m/s

(b) _____ m/s

(c) _____ m/s

Additional problems

2.A.5 A kangaroo-like animal on a mysterious planet jumps and then moves in

(10.00) freefall motion, first straight up, and then straight down as the planet's gravitational acceleration reverses its direction. Its vertical position at a certain time is described by the function $y(t) = -t^2 + 4.0t + 4.0$, where y is in meters and t is in seconds. (a) Draw the position versus time graph from $t = -2.0$ s to $t = 6.0$ s. (b) Determine the displacement from $t = 0$ s to $t = 2.0$ s. (c) Determine the average vertical velocity from $t = 0$ s to $t = 2.0$ s. (d) Determine the average vertical velocity from $t = 1.0$ s to $t = 2.0$ s. (e) Draw a line tangent to the graph at $t = 2.0$ s. What is its slope? (f) Assume there is no air resistance. What is the acceleration due to gravity on this planet?

(a) Submit answer on paper.

(b) _____ m

(c) _____ m/s

(d) _____ m/s

(e) _____ m/s

(f) _____ m/s^2

2.A.8 **(10.00)** Starting from rest at the ground floor, an elevator takes 19.0 seconds for a vertical trip of 70.0 meters. It begins its journey with 4.50 seconds of constant acceleration, then moves for 9.00 seconds at constant velocity, and finally, moves for 5.50 seconds of constant negative acceleration that brings the elevator to a stop. (a) What is the maximum velocity of the elevator? (b) What is the elevator's initial acceleration? (c) What is its final acceleration?

(a) _____ m/s

(b) _____ m/s^2

(c) _____ m/s^2

Back to assignments list

Current server time is: 2008-02-17 16:23