Quiz 2

Due: 11:59pm on Tuesday, October 28, 2014

You will receive no credit for items you complete after the assignment is due. Grading Policy

Problem 2.21

Part A

A ball rolls across a floor with an acceleration of 0.100 m/s^2 in a direction opposite to its velocity. The ball has a velocity of 4.00 m/s after rolling a distance 6.00 m across the floor. What was the initial speed of the ball?

ANSWER:

- ⦿ 4.15 m/s
- ◯ 5.85 m/s
- ◯ 3.85 m/s
- ◯ 5.21 m/s
- ◯ 4.60 m/s

Correct

Problem 2.36

Part A

Two identical stones are dropped from rest and feel no air resistance as they fall. Stone A is dropped from height h, and stone B is dropped from height $2h$. If stone A takes time t to reach the ground, stone B will take time

ANSWER:

- ◯ $4t$.
- ⦿ $t\sqrt{2}$.
- ◯ $2t$.
- ◯ $t/2$.
- ◯ $t/\sqrt{2}$.

Correct

Problem 2.14

Part A

The velocity of an object is given by the expression $v(t) = 3.00$ m/s + $(3.00$ m/s$^3)t^2$, where t is in seconds. Determine the position of the object as a function of time if it is located at $x = 1.00$ m at time $t = 0.000$ s.

ANSWER:

- ○ $x(t) = (3.00$ m/s$)t + (1.00$ m/s$^3)t^3$
- ○ $x(t) = (3.00$ m/s$)t$
- ◉ $x(t) = 1.00$ m + $(3.00$ m/s$)t + (1.00$ m/s$^3)t^3$
- ○ $x(t) = (3.00$ m/s$)t + 1.00$ m
- ○ $x(t) = 1.00$ m

Correct

Problem 2.25

Part A

A package is dropped from a helicopter moving upward at 15 m/s. If it takes 29 s before the package strikes the ground, how high above the ground was the package when it was released if air resistance is negligible?

ANSWER:

- ○ 2960 m
- ○ 2220 m
- ○ 4440 m
- ◉ 3700 m

Correct

Problem 4.21

Part A

A plane flying at 70.0 m/s suddenly stalls. If the acceleration during the stall is 9.8 m/s^2 directly downward, the stall lasts 5.0 s, and the plane was originally climbing at 25° to the horizontal, what is the velocity after the stall?

ANSWER:

- ⦿ 66 m/s at 17° below the horizontal
- ○ 80 m/s at 37° above the horizontal
- ○ 66 m/s at 17° above the horizontal
- ○ 80 m/s at 37° below the horizontal

Correct

Problem 4.24

Part A

A plane has an eastward heading at a speed of 156 m/s (relative to the air). A 20.0 m/s wind is blowing southward while the plane is flying. The velocity of the plane relative to the ground is

ANSWER:

- ○ 155 m/s at an angle 7.36° east of south.
- ○ 155 m/s at an angle 7.36° south of east.
- ○ 157 m/s at an angle 7.36° south of east.
- ⦿ 157 m/s at an angle 7.31° south of east.
- ○ 157 m/s at an angle 7.31° east of south.

Correct

Problem 4.02

Part A

An object has a position given by $\vec{r} = [2.0 \text{ m} + (1.00 \text{ m/s})t]\, \hat{i} + [3.0 \text{ m} - (5.00 \text{ m/s}^2)t^2]\, \hat{j}$, where quantities are in SI units. What is the speed of the object at time $t = 2.00$ s?

ANSWER:

○ 16.0 m/s

○ 12.0 m/s

○ 24.0 m/s

○ 28.0 m/s

◉ 20.0 m/s

Correct

Problem 4.3

Part A

An object has a position given by $\vec{r} = [2.0 \text{ m} + (3.00 \text{ m/s})t]\,\hat{i} + [3.0\text{m} - (3.00 \text{ m/s}^2)t^2]\,\hat{j}$, where all quantities are in SI units. What is the magnitude of the acceleration of the object at time t = 2.00 s?

ANSWER:

◉ 6.00 m/s^2

○ 4.80 m/s^2

○ 0.00 m/s^2

○ 7.20 m/s^2

○ 3.00 m/s^2

Correct

Problem 4.07

Part A

A hockey puck slides off the edge of a table with an initial velocity of 23.1 m/s and experiences no air resistance. The height of the tabletop above the ground is 2.00 m. What is the angle below the horizontal of the velocity of the puck just before it hits the ground?
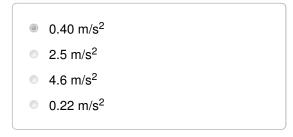
ANSWER:

- ○ 77.2°
- ○ 22.8°
- ◉ 15.2°
- ○ 31.8°
- ○ 72.6°

Correct

Problem 4.34

Part A

An aircraft performs a maneuver called an "aileron roll." During this maneuver, the plane turns like a screw as it maintains a straight flight path, which sets the wings in circular motion. If it takes it 24 s to complete the circle and the wingspan of the plane is 11.6 m, what is the acceleration of the wing tip?

ANSWER:

- ◉ 0.40 m/s^2
- ○ 2.5 m/s^2
- ○ 4.6 m/s^2
- ○ 0.22 m/s^2

Correct

Score Summary:

Your score on this assignment is 90.0%.
You received 9 out of a possible total of 10 points.