Exercise

Kinematics Part II

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2.2 Displacement, position, velocity, speed & acceleration

Alice is driving from Kuala Lumpur to Ipoh by a car at a constant 50 km/h for 100 km. She then speeds up to 100 km/h and drive another 100 km to Alor Star. Find the car's average speed for the 200 km trip?

Ans : 66.7 km/h

2.3. Instantaneous velocity and speed

A tiger is running to the east of National Park ranger vehicle at 20 m. At time t = 0 the tiger chase hyena in a straight line. At 2.0 s, the tiger's coordinate is given by relation x = 20 m + (5.0 m/s^2)t^2. Calculate

a) The displacement of the tiger

b) The average velocity

c) The instantaneous velocity

At time interval t_1 = 1.0 s to t_2 =2.0 s.

(Ans: 15 m , 15 m/s, 10 m/s and 20 m/s)

2.4 Freely Falling Object and Projectile

Abu throws coin upward from the roof of the UTC building. Given the initial velocity of the coin is 20 m/s. Calculate

(a) The time the coin reach the highest point

(b) The highest point

(c) The position and velocity of the coin at 1.5 s

(d) The position and velocity of the coin at 5 s

Ans : (a) 2.04 s (b) 20.4 m (c) 5.3 m/s (d) -23 m, -29 m/s

2.4 Freely Falling Object and Projectile

An Olympic athlete hits baseball and the baseball speed at initial velocity, v_o=37.0 m/s and 53.1°. Given g = 9.81 m/s^2. Find

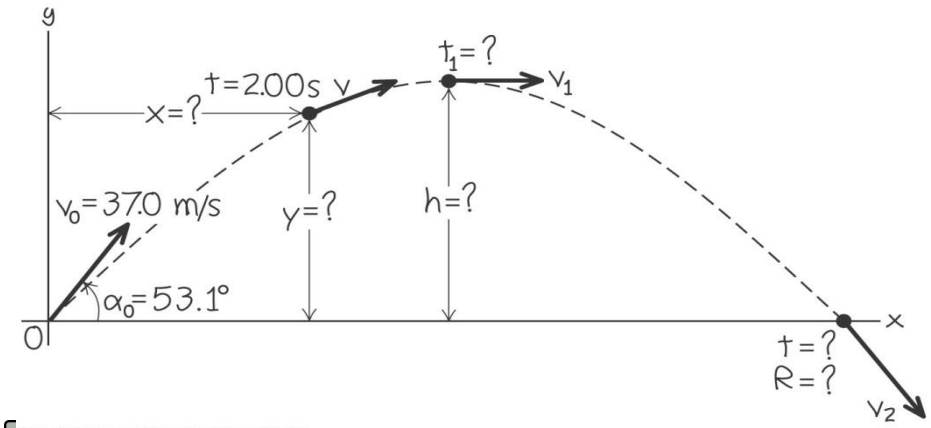
a) The position of the baseball

b) The magnitude and direction of the baseball velocity at t = 2.00 s.

c) The time when the baseball reach the maximum point

d) The maximum height

e) The horizontal range.



Ans: 39.6 m/s, 24.2°, 3.02 s, 44.7 m, 134 m)