Exercise

Kinematics_Part1

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Exercise 1

Given $\vec{A} = 10\hat{i} - 2\hat{j} - 4\hat{k}$ and $\vec{B} = -2\hat{i} + 5\hat{j} - 10\hat{k}$. Calculate the vector cross product of this two vectors. $Ans: 40\hat{i} + 108\hat{j} + 46\hat{k}$

Exercise 2

A school bus travel at a constant 50km/h for 100 km. It then speeds up to 100km/h and is driven another 100 km. What is the bus's average speed for the 200 km trip? $Ans: 66.7km$

Exercise 3

A wooden toy train moving in a straight line. Given the equation for its velocity, $v_x = (40 - 5t^2)$ m/s where t is a time (second). Calculate the

(a) average acceleration during the time interval t=0 and t=2.0 s. $Ans: -10\ \mathrm{m/s^2}$

(b) instantaneous acceleration at t=2.0 s. $Ans: -20\ \mathrm{m/s^2}$

Exercise 4

Given the position of the nucleus is at $x = 3 + 2.5t + 6t^3$ where x is in meter and t in second. Calculate Instantaneous velocity at t = 3.00 s. $Ans: 164.5\,\mathrm{m/s}$