

Week 10 Graph Sketching & Kinematics Lecture Note

Notebook: Computational Mathematics

Created: 2020-04-21 2:48 PM

Updated: 2020-05-22 5:57 PM

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Cornell Notes

Topic:

Graph Sketching &
Kinematics Continued

Course: BSc Computer Science

Class: Computational
Mathematics[Lecture]

Date: May 22, 2020

Essential Question:

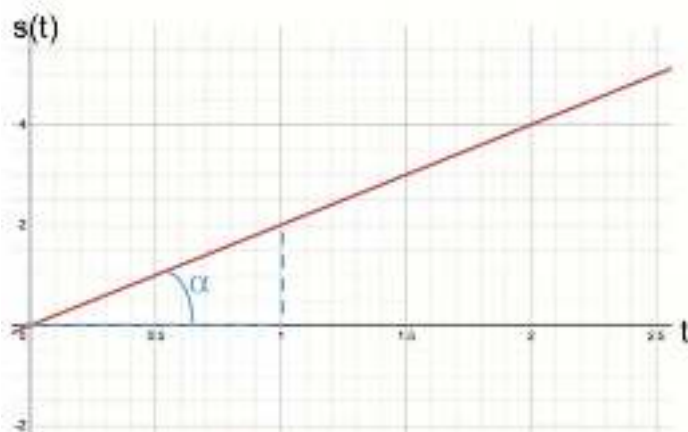
What is a function and what are its applications to kinematics (simple motion)?

Questions/Cues:

- What is the uniform motion on a straight line in the case of constant velocity?
- What is uniformly accelerated motion in the case of a projectile?

Notes

Uniform motion on a straight line: constant velocity



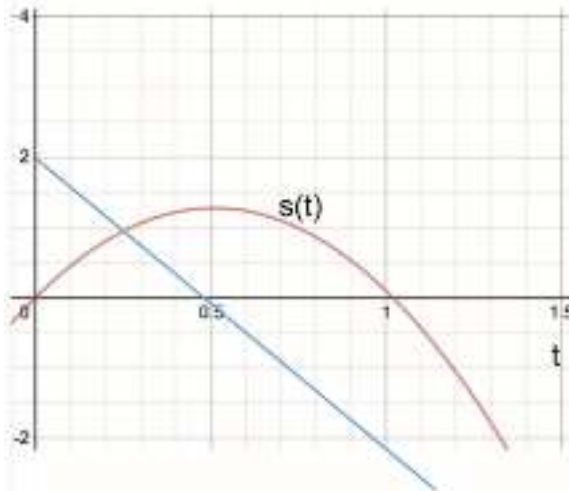
$$v(t) = v_0 = \text{const}$$
$$s(t) = s_0 + v_0 t$$

$$s_0 = 0$$

$$v_0 = 2 \text{ m/s}$$

$$\tan(\alpha) = 2/1 = v_0$$

Uniformly accelerated motion: projectile



$$v(t) = v_0 + a t$$
$$s(t) = s_0 + v_0 t + \frac{a t^2}{2}$$

$$s_0 = 0$$
$$v_0 = 2 \text{ m/s}$$
$$a = g = -9.8 \text{ m/s}^2$$

Uniform motion

$$v(t) = v_0 = \text{const}$$
$$s(t) = s_0 + v_0 t$$

Uniformly accelerated motion

$$v(t) = v_0 + a t$$
$$s(t) = s_0 + v_0 t + \frac{a t^2}{2}$$

Summary

In this week, we learned about uniform motion and uniformly accelerated motion.