MA104 Lesson 39

LESSON 39 - Projectile Motion

Monday, 31 March, 2008

Outline

1. Admin
2. Last Class
3. Projectile Motion
   - Course Guide
   - Definitions
4. Board Problems
5. Look Forward - PROJECTILE MOTION I

Admin

1. WPR Wednesday

VECTOR FUNCTIONS AND THEIR DERIVATIVES

Questions?

Outline

1 Admin

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5 Look Forward - PROJECTILE MOTION I

Objectives

1. Understand the relationship between the position, velocity, and acceleration vectors for an objects' motion in space.
2. Find the velocity and acceleration vectors when given the position vector and an initial condition.
3. Be able to use the parametric equations of motion in order to solve projectile motion problems.

READ

1. Stewart: Section 13.4, pages 838-842 (Stop at Tangential and Normal Components of Acceleration).
2. Student Notes.

THINK ABOUT

1. What does the magnitude of the velocity vector represent?
2. What assumptions are made in the book when solving projectile motion problems?

DO Problems

1. Section 13.4/ 3, 5, 10, 13, 23

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Velocity and Acceleration

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4. The speed of the particle is the magnitude of the velocity vector $= |\mathbf{v}(t)| = |\mathbf{r}'(t)|$
5. Finally the acceleration of the particle is the derivative of the velocity $\mathbf{a}(t) = \mathbf{v}'(t) = \mathbf{r}''(t)$

Projectiles

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2. Table to describe projectile motion
3. What is true at the maximum height of a projectile?

Examples and Do Problem Help

1. Section 13.4/ 3, 5, 10, 13, 23

The Slingshot and the Launcher

LESSON 40 - PROJECTILE MOTION II

1. OBJECTIVES:
   1. Understand the relationship between the position, velocity, and acceleration vectors for an objects' motion in space.
   2. Find the velocity and acceleration vectors when given the position vector and an initial condition.
   3. Be able to use the parametric equations of motion in order to solve projectile motion problems.
2. READ:
   1. Stewart: Section 13.4, pages 838-842 (Stop at Tangential and Normal Components of Acceleration).
   2. Student Notes.
3. THINK ABOUT:
   1. What does the magnitude of the velocity vector represent?
   2. What assumptions are made in the book when solving projectile motion problems?
4. DO:
   1. Section 13.4/ 19, 24, 25, 26, 28

Questions?

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