Module 02-Lesson 1

Instantaneous Velocity and Acceleration

Question 1: The altitude of a rocket in the first half-minute of its ascent is given $y = bt^2$ by where $b = 3.0$ m/s^2. Find the rocket's velocity at $t = 10$ s.

Question 2: Find an expression for the acceleration as a function of time for the rocket described in the previous question.

Problem: The displacement of a car moving in a straight line as a function of time is described by the function $x = t^2 - 5t + 1$ m, where t is measured in seconds and all constants are assumed to have the correct SI units. (a) Determine the particle's position, velocity, and acceleration at $t = 1.0$ s. (b) Are there any turning points in the particle's motion? If so, at what position or positions? (c) Where is the particle when $v_x = 4.0$ m/s?