

Guidelines – Problems marked with an asterisk will be scored for the homework portion of your grade. You are responsible for the content and techniques associated with all of the problems, even if they have not been graded. Please show all of your work for your homework solutions so that I can see how you went about solving the problems. I will not give credit for simply writing down a numerical answer. For problems that require you to establish a coordinate system (origin and axes) you should also include a sketch that shows your choice of origin and direction. When answering Questions for Discussion be sure to explain Yes/No-type answers.

Chapter 2 – Questions for Discussion 9, 14

Problems 22*, 24, 46*, 64, 71*, 91*, 116*

Additional Problems

- A.*** Take a ball and drop it vertically from your outstretched hand. Observe the bouncing behavior several times. Then sketch x vs t , v vs t , and a vs t graphs for the observed behavior. Be sure to place the diagrams vertically with respect to each other so that corresponding clock readings line up appropriately. Be sure also to define which direction you take to be positive (up or down). Use what you observed in lab for the cart bouncing on the ramp as a guide.
- B.** A numerical value of acceleration can be interpreted as telling us “how fast the velocity of a body is changing.” Starting with the *definition* of acceleration, explain why this is a legitimate statement. Now consider the following statement: “A numerical value of acceleration, given alone, tells us nothing about how fast the object in question is moving.” Is this statement correct or incorrect? Explain your answer carefully by referring to the definitions of both velocity and acceleration.
- C.*** An object starts from rest at position $x = 0.0$ m at clock reading $t = 0.0$ s. At clock reading $t = 5.0$ s it is observed to be at position $x = +40.0$ m and to have an instantaneous velocity of $v = +11.0$ m/s. Examine the interconnections of the given data carefully.
- Was the acceleration of the object uniform or nonuniform? Explain your reasoning.
 - Sketch the shape of the velocity versus clock reading graph that is implied by the data. That is, is the graph straight or curved? If it is curved, is it concave upward or downward?