ANSWERS

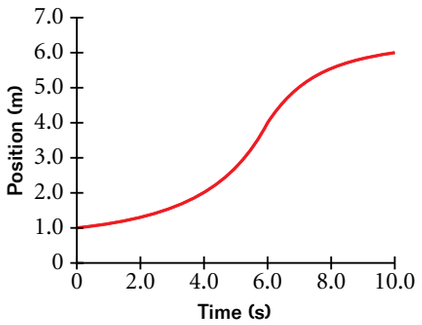
1. 5.0 m; +5.0 m
2. the slope of the line at each point
3. t_1: negative; t_2: positive; t_3: positive; t_4: negative; t_5: zero
4. **a.** 0 to t_1; t_1 to t_2; t_3 to t_4; t_4 to t_5
   b. t_1 to t_2; t_2 to t_3; t_3 to t_4
5. The duck's displacement must also be zero.
6. The time interval is always positive because time can only move in one direction (forward).
7. 10.1 km to the east
8. 4.22×10^1 km
9. **a.** +70.0 m
   b. +140.0 m
   c. +14 m/s
   d. +28 m/s

CHAPTER 2
Review

DISPLACEMENT AND VELOCITY

Review Questions

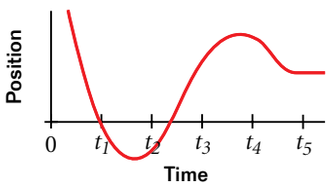
1. On the graph below, what is the total distance traveled during the recorded time interval? What is the displacement?



2. On a position-time graph such as the one above, what represents the instantaneous velocity?

3. The position-time graph for a bug crawling along a line is shown in item 4 below. Determine whether the velocity is positive, negative, or zero at each of the times marked on the graph.

4. Use the position-time graph below to answer the following questions:
   a. During which time interval(s) is the velocity negative?
   b. During which time interval(s) is the velocity positive?



Conceptual Questions

5. If the average velocity of a duck is zero in a given time interval, what can you say about the displacement of the duck for that interval?

6. Velocity can be either positive or negative, depending on the direction of the displacement. The time interval, Δt, is always positive. Why?

Practice Problems

For problems 7–11, see Sample Problem A.

7. A school bus takes 0.530 h to reach the school from your house. If the average velocity of the bus is 19.0 km/h to the east, what is the displacement?

8. The Olympic record for the marathon is 2.00 h, 9.00 min, 21.0 s. If the average speed of a runner achieving this record is 5.436 m/s, what is the marathon distance?

9. Two cars are traveling on a desert road, as shown below. After 5.0 s, they are side by side at the next telephone pole. The distance between the poles is 70.0 m. Identify the following quantities:
   a. the displacement of car A after 5.0 s
   b. the displacement of car B after 5.0 s
   c. the average velocity of car A during 5.0 s
   d. the average velocity of car B during 5.0 s

