Pre-Lab Practice: Kinematics in One Dimension

Review the Textbook:

- *PHYS 1401: Serway & Vuille: Sec 2.1-2.5.*
- *PHYS 2425: Serway & Jewett: Sec 2.1-2.6.*

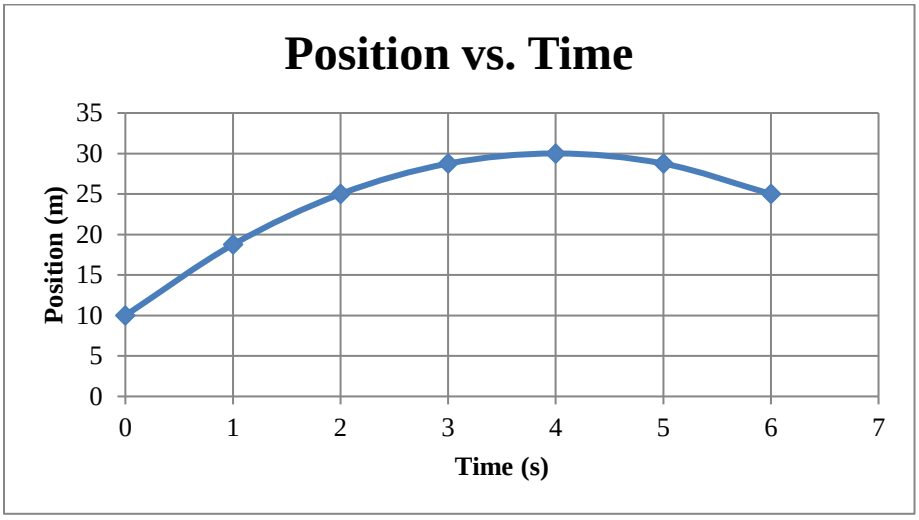

Figure 1. Position of a train on a straight track, as a function of time.

1. What is the distance traveled by the train between 0.0 and 6.0 seconds?
   (25.0 m)

2. What is the displacement of the train between 0.0 and 6.0 seconds?
   (15.0 m)

3. What is the average speed of the train between 0 and 6.0 seconds?
   (4.17 m/s)

4. What is the average velocity of the train between 0.0 and 6.0 seconds?
   (2.5 m/s)

5. What is the instantaneous velocity of the train at 2.0 seconds?
   (5 m/s)

6. A car has a position that is can be described by $x(t) = 20 + 4t^2$, with x in meters and t in seconds. What is the instantaneous velocity of the car at t =4.0 s?
   (32 m/s)

7. A car has a position that is can be described by $x(t) = 20 + 4t^2$, with x in meters and t in seconds. What is the instantaneous acceleration of the car at t =4.0 s?
   ($8\ m/s^2$)