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Chapter: Motion in one-dimension (EE117) Worksheet # 02

Q1. The position versus time for a certain particle moving along the *x* axis is shown in Figure 1.1 Find the average velocity in the time intervals (a) 0 to 2 s, (b) 0 to 4 s, (c) 2 s to 4 s, (d) 4 s to 7 s, (e) 0 to 8 s.

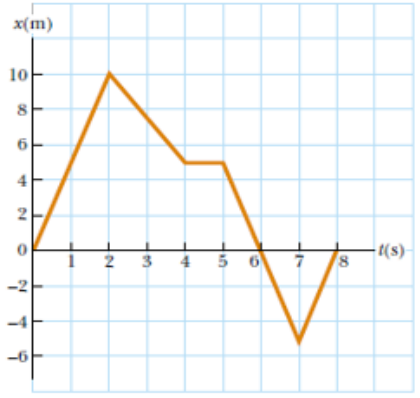

Fig. 1.1

Q2. Find the instantaneous velocity of the particle described in Figure 1.1 at the following times: (a) t = 1.0 s, (b) t = 3.0 s, (c) t = 4.5 s, and (d) t = 7.5 s.

Q3. Figure 1.3 shows a graph of $\boldsymbol{v_x}$ versus $\boldsymbol{t}$ for the motion of a motorcyclist as he starts from rest and moves along the road in a straight line. (a) Find the average acceleration for the time interval t= 0 to t = 6.00 s. (b) Estimate the time at which the acceleration has its greatest positive value and the value of the acceleration at that instant. (c) When is the acceleration zero? (d) Estimate the maximum negative value of the acceleration and the time at which it occurs.

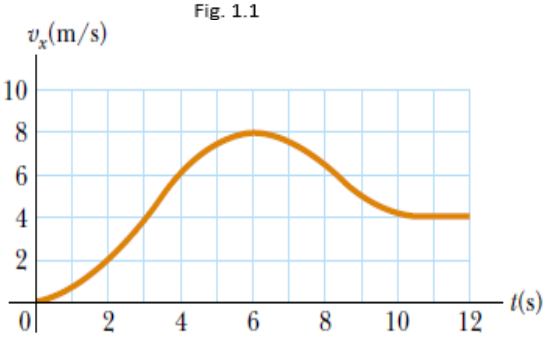

Fig. 1.3

Q4. A person walks first at a constant speed of 5.00 m/s along a straight line from point *A* to point *B* and then back along the line from *B* to *A* at a constant speed of 3.00 m/s. What is (a) her average speed over the entire trip? (b) her average velocity over the entire trip?

Q5. If the velocity of a particle is nonzero, can its acceleration be zero? Explain.