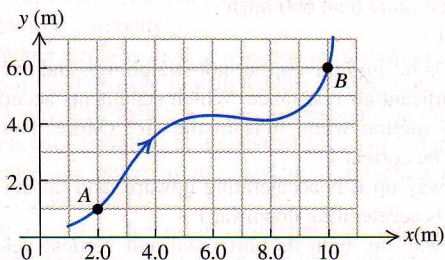
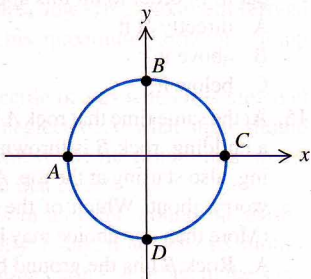


- A meteor streaking through the night sky is located with radar. At point  $A$  its coordinates are  $(5.00 \text{ km}, 1.20 \text{ km})$ , and  $1.14 \text{ s}$  later it has moved to point  $B$  with coordinates  $(6.24 \text{ km}, 0.925 \text{ km})$ . Find (a) the  $x$  and  $y$  components of its average velocity between  $A$  and  $B$  and (b) the magnitude and direction of its average velocity between these two points.
- A dragonfly flies from point  $A$  to point  $B$  along the path shown in Figure 3.34 in  $1.50 \text{ s}$ . (a) Find the  $x$  and  $y$  components of its position vector at point  $A$ . (b) What are the magnitude and direction of its position vector at  $A$ ? (c) Find the  $x$  and  $y$  components of the dragonfly's average velocity between  $A$  and  $B$ . (d) What are the magnitude and direction of its average velocity between these two points?



▲ **FIGURE 3.34** Problem 3.

- A coyote chasing a rabbit is moving  $8.00 \text{ m/s}$  due east at one moment and  $8.80 \text{ m/s}$  due south  $4.00 \text{ s}$  later. Find (a) the  $x$  and  $y$  components of the coyote's average acceleration during that time and (b) the magnitude and direction of the coyote's average acceleration during that time.
- An athlete starts at point  $A$  and runs at a constant speed of  $6.0 \text{ m/s}$  around a round track  $100 \text{ m}$  in diameter, as shown in Figure 3.35. Find the  $x$  and  $y$  components of this runner's average velocity and average acceleration between points (a)  $A$  and  $B$ , (b)  $A$  and  $C$ ,



▲ **FIGURE 3.35** Problem 5.