

**2.26. Visualize:** Please refer to Figure P2.26.

**Solve:** The graph for particle A is a straight line from  $t = 2$  s to  $t = 8$  s. The slope of this line is  $-10$  m/s, which is the velocity at  $t = 7.0$  s. The negative sign indicates motion toward lower values on the  $x$ -axis. The velocity of particle B at  $t = 7.0$  s can be read directly from its graph. It is  $-20$  m/s. The velocity of particle C can be obtained from the equation

$$v_f = v_i + \text{area under the acceleration curve between } t_i \text{ and } t_f$$

This area can be calculated by adding up three sections. The area between  $t = 0$  s and  $t = 2$  s is  $40$  m/s, the area between  $t = 2$  s and  $t = 5$  s is  $45$  m/s, and the area between  $t = 5$  s and  $t = 7$  s is  $-20$  m/s. We get  $(10 \text{ m/s}) + (40 \text{ m/s}) + (45 \text{ m/s}) - (20 \text{ m/s}) = 75 \text{ m/s}$ .