

1. The graphs of the *velocity* of two particles are shown, where t is measured in seconds. When are the particles slowing down and when are they speeding up?



- 2. The volume of water in a leaky bucket at t minutes is given by the formula $V(t) = 5(1 t/30)^2$ when $0 \le t \le 30$. Find the rate at which water is leaking out after 15 minutes. When is the water leaking out the fastest? The slowest?
- 3. An economist predicts that the buying power B(t) of a dollar t years from now will decrease according to the formula $B(t) = (0.96)^t$. At what rate will the buying power be decreasing 3 years from now?
- 4. The cost for a company manage x apartment units is given by the formula $C(x) = 80x + \frac{5,000}{x} + 12,000$.
 - (a) Find the marginal cost
 - (b) Find C'(10) and interpret its meaning
 - (c) Compare C'(10) with the cost of managing the 11th apartment unit
- 5. If C(x) is the cost to produce x units of a product, the *average cost* is given by the formula $A(x) = \frac{C(x)}{x}$. Find A'(x) and interpret its meaning. What is the significance of the relationship between A'(x) and C'(x).