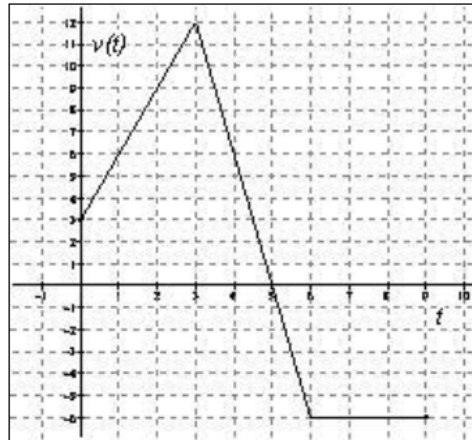


Example 2 (graphical).

The graph below represents the velocity v , in feet per second, of a particle moving along the x -axis over the time interval from $t = 0$ to $t = 9$ seconds.



1. At $t = 4$ seconds, is the particle moving to the right or left? Explain your answer.
2. Over what time interval is the particle moving to the left? Explain your answer.
3. At $t = 4$ seconds, is the acceleration of the particle positive or negative? Explain your answer.
4. What is the average acceleration of the particle over the interval $2 \leq t \leq 4$? Show the computations that lead to your answer and indicate units of measure.
5. Is there guaranteed to be a time t in the interval $2 \leq t \leq 4$ such that $v'(t) = -3/2$ ft/sec²? Justify your answer.
6. At what time t in the given interval is the particle farthest to the right? Explain your answer.

Problem # 3 on Motion

(analytic).

A particle moves along the x -axis so that at time t its position is given by:

$$x(t) = t^3 - 6t^2 + 9t + 11$$

1. At $t = 0$, is the particle moving to the right or to the left? Explain your answer.
2. At $t = 1$, is the velocity of the particle increasing or decreasing? Explain your answer.
3. Find all values of t for which the particle is moving to the left.
4. Find the total distance traveled by the particle over the time interval $0 \leq t \leq 5$.