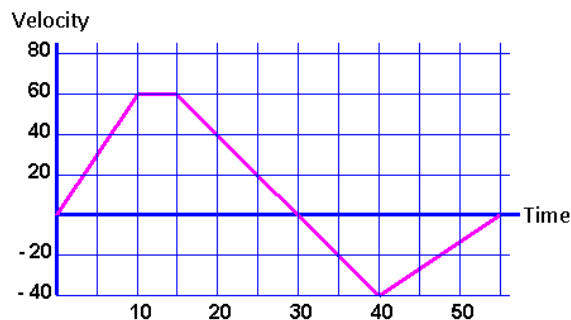


1. The data in the table below give selected values for the velocity, in meters/minute, of a particle moving along the x -axis. The velocity v is a differentiable function of time t .

Time t (min)	0	2	5	6	8	12
Velocity $v(t)$ (meters/min)	-3	2	3	5	7	5

- a) Is there a time during the interval $0 \leq t \leq 12$ minutes when the particle is at rest? Explain your answer.
- b) Let $a(t)$ denote the acceleration of the particle at time t . Is there guaranteed to be a time $t = c$ in the interval $0 \leq t \leq 12$ such that $a(c) = 0$? Justify your answer.

2. 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 $t = 55$ seconds.



- Is there guaranteed to be a time in the interval $30 \leq t \leq 55$ such that $v'(t) = 0$ ft/sec²? Justify your answer.