



2. A particle moves along the x -axis so that its velocity v at time $t \geq 0$ is given by $v(t) = \sin(t^2)$. The graph of v is shown above for $0 \leq t \leq \sqrt{5}\pi$. The position of the particle at time t is $x(t)$ and its position at time $t = 0$ is $x(0) = 5$.
- (a) Find the acceleration of the particle at time $t = 3$.
 - (b) Find the total distance traveled by the particle from time $t = 0$ to $t = 3$.
 - (c) Find the position of the particle at time $t = 3$.
 - (d) For $0 \leq t \leq \sqrt{5}\pi$, find the time t at which the particle is farthest to the right. Explain your answer.
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