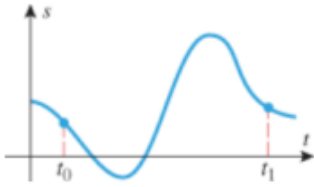


More Practice with Rectilinear Motion

1. The position function of a particle moving on a horizontal axis is shown in the accompanying figure.



- (a) Is the particle moving to the left or to the right at time t_0 ?
- (b) Is the acceleration positive or negative at time t_0 ?
- (c) Is the particle speeding up or slowing down at time t_0 ?
- (d) Is the particle speeding up or slowing down at time t_1 ?
2. A particle moves along a straight line according to the equation $s(t) = 5 \sin t$ when $0 \leq t \leq 2\pi$.
- (a) When is the particle moving to the left? to the right?
- (b) When is the particle speeding up? slowing down?
- (c) What is the total distance traveled by the particle from $t = 0$ to $t = 2\pi$?
3. Given the position function $x(t) = t^4 - 8t^2$, find the distance that the particle travels from $t = 0$ to $t = 4$.
4. Given the position function $s(t) = \frac{4}{3}t^3 - 2t^2 - 8t$ when $t \geq 0$, find:
- (a) interval(s) when particle is speeding up
- (b) interval(s) when particle is slowing down
- (c) the acceleration when the particle reverses direction