

A particle is moving with the given data. Find the position of the particle:

1. $v(t) = \sin t - \cos t$ $s(0) = 0$

2. $a(t) = t - 2$ $s(0) = 1$ $v(0) = 3$

3. $a(t) = 10 + 3t - 3t^2$ $s(0) = 0$ $s(2) = 10$

4. A stone is dropped from the upper observation deck of the CN Tower, 450 m above the ground.

- a. Find the distance of the stone above ground level at time t .
- b. How long does it take the stone to reach the ground?
- c. With what velocity does it strike the ground?

5. Two balls are thrown upward from the edge of a cliff 432 feet above the ground. The first is thrown with a speed of 48 ft/s and the other is thrown a second later with a speed of 24 ft/s. Do the balls ever pass each other?

6. A stone was dropped off a cliff and hit the ground with a speed of 120 ft/s. What is the height of the cliff?