

1. The height of an object t seconds after it is launched vertically into the air is given by the position function

$$s(t) = 800t - 16t^2$$

- Sketch the graph of the function.
- Find an equation for its velocity, $v(t)$.
- For which times t is the object rising?
- For which times t is the object falling?
- For which time(s) t is the object at rest before it strikes the ground?
- What is the maximum height reached?
- Determine the time required for the object to reach a height of 9600 ft.
- When does the object strike the ground?

2. A particle moves along a line so that at time t its position is

$$s(t) = 6t - t^2$$

- What is its initial velocity, v_0 ?
- When does it change direction?
- How fast is it moving when it reaches the origin the second time?

3. If a particle is projected vertically upward from ground level with an initial velocity v_0 , its height after t seconds is $s(t) = v_0t - 4.9t^2$ meters. Suppose $v_0 = 98 \text{ m/s}$.

- What is the velocity of the particle at time t ?
- At what time does the particle reach its maximum height?
- What is the maximum height?
- What is the average velocity on the way up?
- How fast is it moving when it strikes the ground?
- What is the average velocity of the whole trip?

Homework: pg 129 – 133 20, 21, 23, 24, 25, 28, 29, 30