

CALCULUS I – Worksheet #45

Find velocity, $v = \frac{ds}{dt}$ and acceleration, $a = \frac{dv}{dt} = \frac{d^2s}{dt^2}$ if s represents the position of the body at any time t .

1. $s = t^2 - 4t + 3$

2. $s = 2t^3 - 5t^2 + 4t - 3$

3. $s = 3 + 4t - t^2$

4. $s = (2t + 3)^2$

5. $s = gt^2 + v_0t + s_0$ (g, v_0, s_0 constants)

6. A particle projected vertically upward with a speed of $160 \frac{\text{ft}}{\text{sec}}$ reaches an elevation $s = 160t - 16t^2$ at the end of t seconds.

(a) How high does it rise?

(b) How fast is it traveling when reach an elevation of 256 feet going up and again when it reaches that elevation coming down?
