

2a. Set $S=0$

$$0 = -16T^2 + 144T$$

$$0 = -16T(T-9)$$

$$T=0 \text{ or } T=9$$

9 sec.

2b. Same as finding vertex of parabola

$$y = -16x^2 + 144x$$

Can use $x = \frac{-B}{2A} = \frac{-(144)}{2(-16)} = 4.5$

Max ht at 4.5 sec.

To find max ht, use

$$S = -16(4.5)^2 + 144(4.5) = 324$$

324 ft.

2c.

T	S
1	128
4	320

$$\frac{320 - 128}{4 - 1} = +65\frac{1}{3}$$

$+65\frac{1}{3}$ ft/sec

positive sign means position increased over the interval