

1a. Independent variable is  $t$ .  
Dependent variable is  $h$ .

1b. Set  $t=3$

$$\begin{aligned} \text{THEN} \\ h &= -16(3)^2 + 112(3) + 160 = 352 \\ & 352 \text{ ft.} \end{aligned}$$

1c. Set  $h=320$

$$320 = -16t^2 + 112t + 160$$

$$0 = -16t^2 + 112t - 160$$

$$0 = t^2 - 7t + 10$$

$$0 = (t-5)(t-2)$$

$$t=5 \text{ and } t=2$$

5 sec. and 2 sec.

1d. Same as finding vertex  
of parabola

$$y = -16x^2 + 112x + 160$$

$$\text{Use } x = -\frac{B}{2A} = -\frac{112}{2(-16)} = 3.5$$

At time 3.5 sec

1e. Set  $t=3.5$

$$h = -16(3.5)^2 + 112(3.5) + 160 = 356$$

356 ft.