

35 (a) When $g = 32$, $v_0 = 88$, and $h_0 = 25$ the function becomes $f(x) = -\frac{1}{2}(32)x^2 + 88x + 25$.

Graph $Y_1 = -16X^2 + 88X + 25$. By tracing along the graph the maximum height is found to be approximately 146 feet. This height occurs when $x \approx 2.75$ seconds. See *Figure 35*.

(b) To find the maximum height symbolically, use the vertex formula with $a = -16$ and $b = 88$.

$$x = -\frac{b}{2a} = -\frac{88}{2(-16)} = \frac{88}{32} = 2.75. \text{ The maximum height occurs at } x = 2.75 \text{ seconds.}$$

$$y = f\left(-\frac{b}{2a}\right) = f(2.75) = -16(2.75)^2 + 88(2.75) + 25 = 146. \text{ The maximum height is 146 feet.}$$

$[0, 6, 1]$ by $[0, 160, 10]$

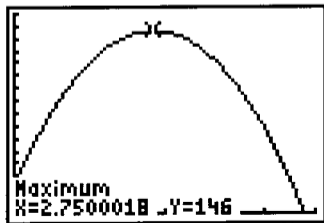


Figure 35