

An object is thrown upward from the top of a 96-foot building with an initial velocity of 80 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 80t + 96$. When will the object hit the ground?

$$h = -16t^2 + 80t + 96$$

$$0 = -16t^2 + 80t + 96$$

$$16t^2 - 80t - 96 = 0$$

$$16(t^2 - 5t - 6) = 0$$

$$16(t + 1)(t - 6) = 0$$

$$\begin{array}{l} t + 1 = 0 \\ -1 \quad -1 \\ t = -1 \\ \text{sec} \end{array} \quad \begin{array}{l} t - 6 = 0 \\ +6 \quad +6 \\ t = 6 \\ \text{sec} \end{array}$$