Answer on Question #48573 – Math – Algebra

If a baseball is thrown straight upward from level ground with an initial velocity of 72 ft/sec, its altitude s (in feet) after t seconds is given by s = -16t square + 72t. For what values of t will the ball be at least 32 feet above the ground?

Solution.

$$\boldsymbol{s = -16t^2 + 72t \geq 32 \rightarrow \ 16t^2 - 72t + 32 \leq 0 \rightarrow \ 2t^2 - 9t + 4 \leq 0 \rightarrow}$$

$$\boldsymbol{\rightarrow \ 2\left(t - \frac{1}{2}\right)(t - 4) \leq 0 \rightarrow \frac{1}{2} \leq t \leq 4}\,.$$