Question #364

Sometimes going back to the basics is a great way to ground your understanding (in any subject!), and so this week we travel back to 2-D kinematics land.

Below is pictured a trajectory of a ball in the air, with a small quirk: rather than defining the time of launch as \( t = 0 \), \( t = 0 \) is defined at when the ball reaches the point labeled in orange. This may be advantageous perhaps, if we wish to "sync" the event with some explosion somewhere else.

\( \Delta t \) refers to the total time of the trip, and \( \Delta y \) refers to the maximum height reached. Click on the image below to view the trajectory in more detail.

![Diagram of a trajectory of a ball in the air with a time of \( t = 0 \) defined at when the ball reaches the point labeled in orange.](image)

Question: From \( t = 0 \), how many seconds later will the ball hit the ground? (Hint: there are enough initial conditions specified to draw the trajectory of the ball.)

- (a) After > 5s.
- (b) After < 5s.
- (c) Other (you must explain).

While you may certainly calculate an answer using pencil and paper, remember: this is a conceptual question, and the answer can be arrived at quickly if thought about cleverly, rather than with brute strength. Click here for Answer #364 after March 1, 2010.
given on the Lecture-Demonstration Home Page.
At what time does the ball hit the ground?