Answer on Question #83661, Physics Mechanics

3) A rubber ball is thrown vertically upwards from the ground and falls on a horizontal smooth surface at the ground. The ball then bounces up and down with decreasing velocity.
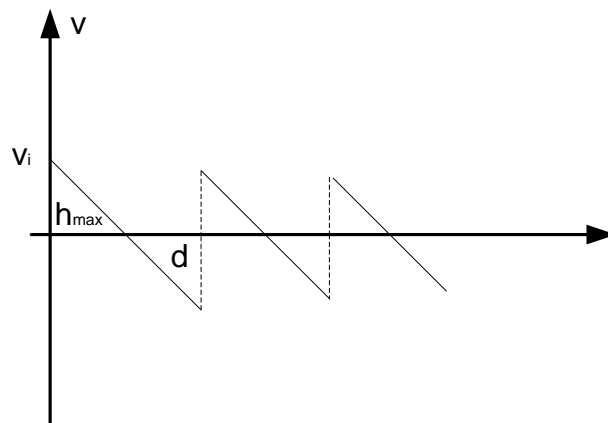a) Draw the velocity time graph of it's motion.
b) From your graph, show how the maximum height of the ball can be found when it is initially thrown up and the distance it falls when it first reaches the ground.
How can the acceleration due to gravity, g, be found from the graph.

Solution

a)

b) $h_{max} = \dfrac{v_i t}{2}$

d - distance it falls when it first reaches the ground. (d=h$_{max}$)

$$g = \dfrac{v_i - v}{t}$$