

**Spring (032) - Phys 101 – Sec # 4**  
**Quiz # 1 (Ch. 2)**

**Name:**

**Key**

**ID #**

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1- A heavy ball falls freely, starting from rest. Calculate the distance it travels between the third and fourth second of time.

$$v_0 = 0$$

at  $t = 3$  s the ball has traveled a distance:

$$\Delta y_1 = v_0 t - \frac{1}{2} g t^2 = 0 - 4.9 (9) = - 44.1 \text{ m}$$

at  $t = 4$  s the ball has traveled a distance:

$$\Delta y_2 = v_0 t - \frac{1}{2} g t^2 = 0 - 4.9 (16) = - 78.4 \text{ m}$$

Therefore, the distance traveled between the third and fourth seconds is:

$$\Delta y_2 - \Delta y_1 = (- 78.4 ) - (- 44.1) = - 34.3 \text{ m}$$

the distance traveled = 34.3 m downward.

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2- The position of a particle is given by:

$$x(t) = 5 + 12 t - 3.0 t^2$$

where  $x$  is in meters and  $t$  is in seconds. Find the time  $t$ , at which the particle is at rest.

$$v = dx/dt = 0 + 12 - 6 t$$

$$\text{the object at rest} \Rightarrow v = 12 - 6 t = 0$$

$$\Rightarrow v = 2 \text{ s.}$$