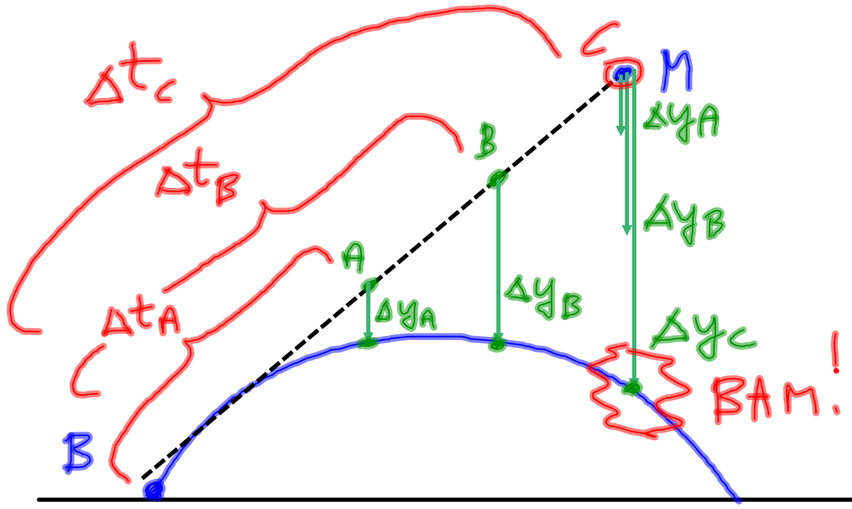


Black dotted line represents a theoretical path without gravity.

The projectile free falls distance shown as a green vector.

The vector sum of no gravity (black) and free fall (green) motion is shown as a resultant projectile path in blue.

The monkey free falls the same vertical distance as the projectile.

When the projectile reaches the plane of the monkey's free fall, both had fallen the same vertical distance, therefore they meet (collide).

Nov 4-9:05 AM

(x)

$$V_x = V_{ox}$$

$$\Delta x = \frac{1}{2}(V_{ox} + V_x)t$$

$$\Delta x = V_{ox} t$$

Big 5 for horizontal direction.

(y)

$$V_y = V_{oy} + gt$$

$$\Delta y = \frac{1}{2}(V_{oy} + V_y)t$$

$$\Delta y = V_{oy} t + \frac{1}{2} g t^2$$

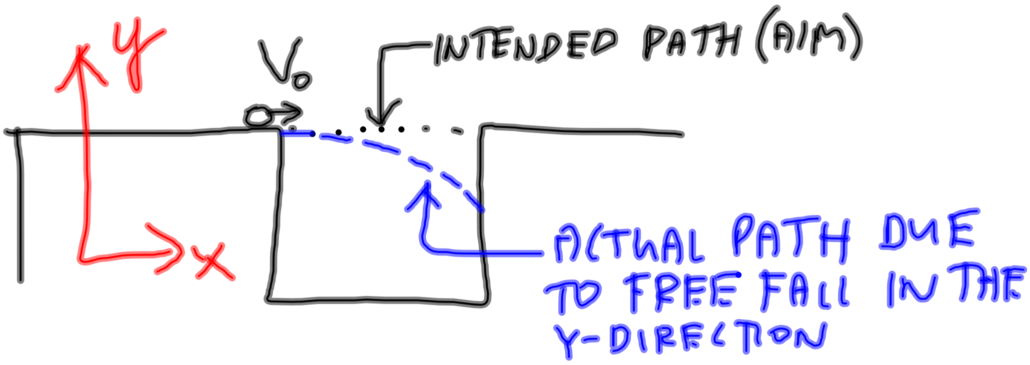
$$\Delta y = \frac{V_y^2 - V_{oy}^2}{2 \cdot g}$$

Big 5 for vertical direction.

Nov 4-9:29 AM

Both balls will rise and fall in unison as seen from the frame of reference of earth.

Nov 4-9:52 AM



A projectile fired horizontally will not land on the other end (at the same elevation), because the moment projectile is fired it is in the free fall.

Nov 4-12:49 PM