Module 3 : Motion in 2-D

Keywords: maximum height, range, time-of-flight

Formulas:

$$t = \frac{2V_{y0}}{g} \qquad \Sigma F = ma$$

$$y_{max} = \frac{V_{y0}^2}{2g}$$

$$x_{max} = \frac{2V_{x0} \cdot V_{y0}}{g}$$

Key points:

- Motion in x and y directions is independent.

General approach:

- Choose a convinient coordinate system
  (positive-y — opposite of the force of gravity,
  x - perpendicular to y)
- Calculate position, velocity, acceleration for x and y seperatly.
- Keep in mind that time is the same.
- Check units.

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