

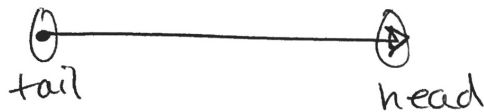
Vectors / 2D projectile motion Notes

- What is a vector?

a quantity that has magnitude & direction.

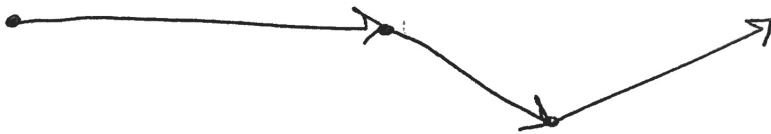
- Vectors can be drawn to represent a quantity.

Vectors have a head and a tail.



- To add vectors:

Vectors must always be added head to tail.

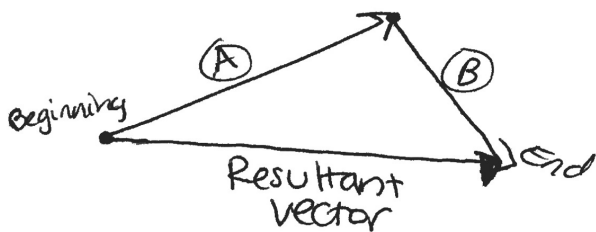


- To get the resultant vector:

Begin at the beginning & end at the end.

Vector A + Vector B =

Resultant vector.



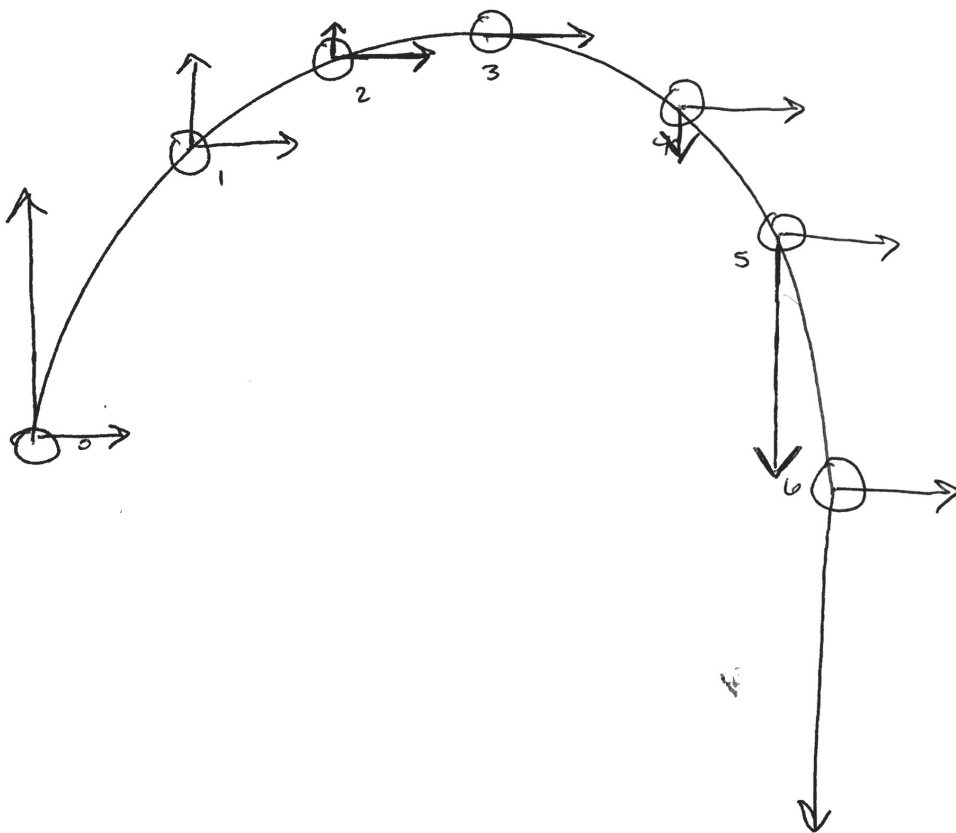
2D Projectile motion

2 components to 2D motion:

① Horizontal - nothing to do with gravity
- velocity is constant.

② Vertical - everything to do with gravity
- gravity is constant. (acceleration)

★ The two components of 2D projectile motion act simultaneously, but are independent of one another.



2D Equations

Horizontal (no gravity)

$$V_x = \frac{dx}{t}$$

Vertical (gravity)

$$dy = V_{iy} t + \frac{1}{2} g t^2$$

$$V_{fy} = V_{iy} + g t$$

$$V_{fy}^2 = V_{iy}^2 + 2g dy$$