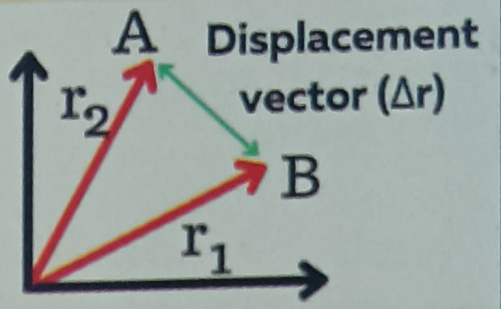
Vectors

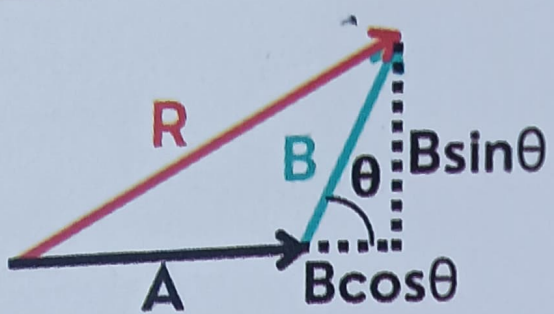
Displacement Vector

The vector which tells how much and in which direction an object has changed its position in a given interval of time is called displacement vector



Addition of Vectors

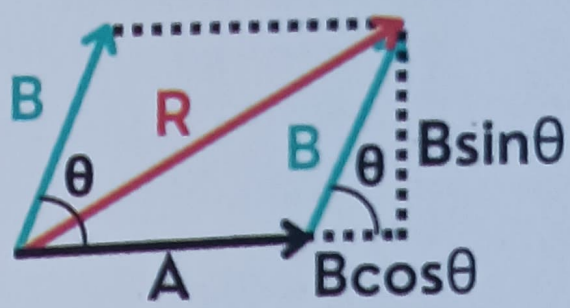
Triangle Law of Vectors Addition



$$R = \sqrt{A^2 + B^2 + 2AB\cos\theta}$$

$$\tan\beta = \frac{B\sin\theta}{A + B\cos\theta}$$

Parallelogram Law of Vectors Addition



$$R = \sqrt{A^2 + B^2 + 2AB\cos\theta}$$

$$\tan\beta = \frac{B\sin\theta}{A + B\cos\theta}$$

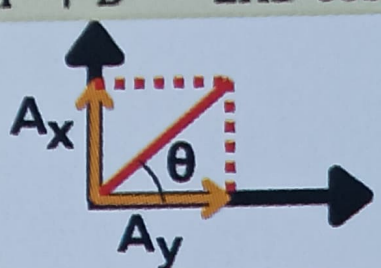
Subtraction of Vector

$$R = \sqrt{A^2 + B^2 - 2AB\cos\theta}$$

Resolution of a Vector into Rectangular Components

Horizontal component, $A_x = A\cos\theta$

Vertical component, $A_y = A\sin\theta$



Scalar or Dot Product of Two Vectors

$$A \cdot B = AB\cos\theta$$

Vector or Cross Product of Two Vectors

$$A \times B = AB\sin$$