

x and y-components of the vector A	$A_x = A \cdot \cos(\theta)$; $A_y = A \cdot \sin(\theta)$ where θ is the angle to the vector measured counterclockwise from the x-axis
magnitude of a vector	$A = \sqrt{A_x^2 + A_y^2}$
direction of a vector	$\theta = \tan^{-1}(A_y/A_x)$ [if A_x and A_y are both >0 , then θ is in the first quadrant. If $A_x > 0$ and $A_y < 0$, then θ is in the fourth quadrant. If $A_x < 0$ and $A_y > 0$, then θ is in the second quadrant. And if $A_x < 0$ and $A_y < 0$, then θ is in the third quadrant.]

$A + B$	graphically: add tip to tail In terms of components the x-component of $A + B$ is $A_x + B_x$ and the y-component of $A + B$ is $A_y + B_y$
x unit vector	(written x-hat) a dimensionless vector of unit length along the x-axis [similarly for y-hat]
position vector displacement vector velocity vector acceleration vector	(definitions as on p 71) “ “ “

let a, b and c be three objects. Let v_{ab} be the velocity of a relative to b and v_{bc} be the velocity of b relative to c then the velocity of a relative to c is

$$V_{ac} = V_{ab} + V_{bc}$$