

Vector - Assignment

① Convert the following vectors in cartesian form to polar form

① $\vec{A} = (2\sqrt{3}, 2) \rightarrow$ Polar form $\vec{A} = (\quad , \quad)$

② $\vec{B} = (-6, 8) \rightarrow$ polar form $\vec{B} = (\quad , \quad)$

③ $\vec{F} = (-\sqrt{3}, -3) \rightarrow$ Polar form $\vec{F} = (\quad , \quad)$

④ $\vec{P} = (4, -3) \rightarrow$ polar form $\vec{P} = (\quad , \quad)$

 **LIVEWORKSHEETS**

II Convert the following vectors in polar form to cartesian form

(1) $\vec{A} = (10\sqrt{2}, 45) \rightarrow$ cartesian form $\vec{A} = (\quad , \quad)$

(2) $\vec{B} = (8, 117^\circ) \rightarrow$ cartesian form $\vec{B} = (\quad , \quad)$

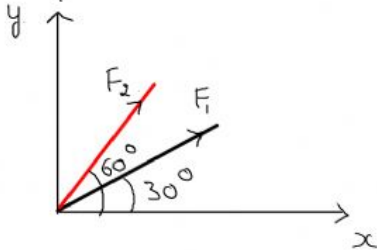
(3) $\vec{C} = (15, 6^\circ) \rightarrow$ cartesian form $\vec{C} = (\quad , \quad)$

(4) $\vec{F} = (200, -45^\circ) \rightarrow$ cartesian form $\vec{F} = (\quad , \quad)$

 **LIVEWORKSHEETS**

III) A force of 45 N is acting at an angle of 53° w.r.t positive y-axis. Find the x and y components of the vector.

IV) Two concurrent forces are acting as shown in the figure below. If ratio of $\frac{F_1}{F_2} = \frac{2}{1}$ find the ratio of

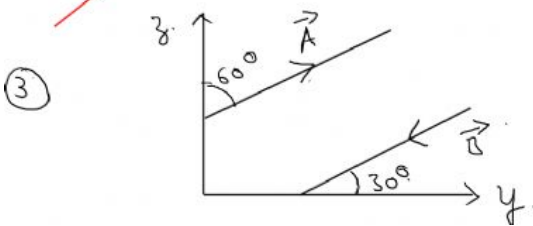
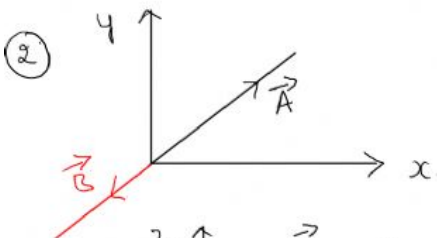
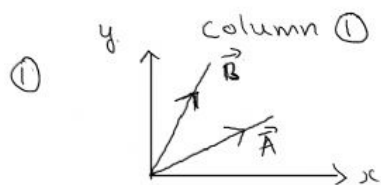


(a) x-components of F_1 to that of F_2 .

(b) y-components of F_1 to that of F_2 .

LIVEWORKSHEETS

V) Match the following. [item in column 1 may have more one item matching in column 2]



column ②

(a) parallel vectors

(b) concurrent vectors

(c) co-planar vectors

(d) anti parallel vectors

LIVEWORKSHEETS

VI Find the Add/sub of the following vectors

① $\vec{P} = (8, 2)$, $\vec{Q} = (6, -3)$ $\vec{P} + \vec{Q} = (\quad , \quad)$

$\vec{Q} - \vec{P} = (\quad , \quad)$

② $\vec{F}_1 = (-6, 4)$, $\vec{F}_2 = (3, 5)$ & $\vec{F}_3 = (2, -6)$

$\vec{F}_1 + \vec{F}_2 + \vec{F}_3 = (\quad , \quad)$

$\vec{F}_1 - \vec{F}_2 + \vec{F}_3 = (\quad , \quad)$

$\vec{F}_1 - \vec{F}_2 - \vec{F}_3 = (\quad , \quad)$

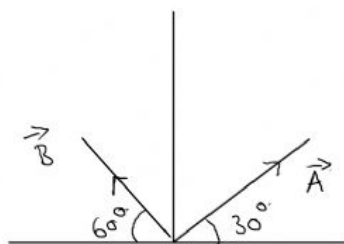
 **LIVEWORKSHEETS**

VII Addition / Subtraction of vectors $\rightarrow$ polar form.

① Two vectors of magnitude 10 and 5 make an angle of 37° . Find the magnitude and direction of resultant.

② Resultant of 2 vectors making an angle of 53° is $\sqrt{65}$. If magnitude of one of the vector is 5 find the magnitude of the other.

③



If magnitude of $\vec{A}$ and $\vec{B}$ is 8 and 6. Find $\vec{A} + \vec{B}$ and $\vec{A} - \vec{B}$

 **LIVEWORKSHEETS**

VII Solve the following problems.

① Find the resultant (R) of two equal forces of magnitude P , if the angle between them is

(a) $60^\circ \rightarrow R = \quad \alpha =$

(b) $90^\circ \quad R = \quad \alpha =$

(c) $120^\circ \quad R = \quad \alpha =$

② If the resultant of 2 velocities V and $2V$ is perpendicular to V , find the angle between the two velocities.