

ইলেকট্রিক্যাল সার্কিটস-১

বিষয় কোড : ২৬৭২১

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Chapter – 01

Vector and Vector Quantities

❖ Vector Quantities

- ➔ Vector Of Different Forms
- ➔ Vector in Polar & Rectangular Forms
- ➔ Relation Between Polar & Rect. Forms

Vector Quantities (ভেক্টর রাশি):

✓ মান ও দিক আছে

যেমনঃ- AC Voltage, AC Current, বল, বেগ ইত্যাদি

➤ Vector Forms :

1. *Rectangular Form*($x+jy$)

2. *Polar Form*($R<\theta$)

3. *Trigonometrical Form*(*Sin, Cos, Tan, Cot, Sec, Cosec*)

4. *Exponential Form*(e^x, e^{-x}) Etc.

Relation Between Polar & Rectangular form:

Rect. To Polar:

$$R = \sqrt{X_A^2 + Y_A^2}$$

$$\theta = \tan^{-1}\left(\frac{Y_A}{X_A}\right)$$

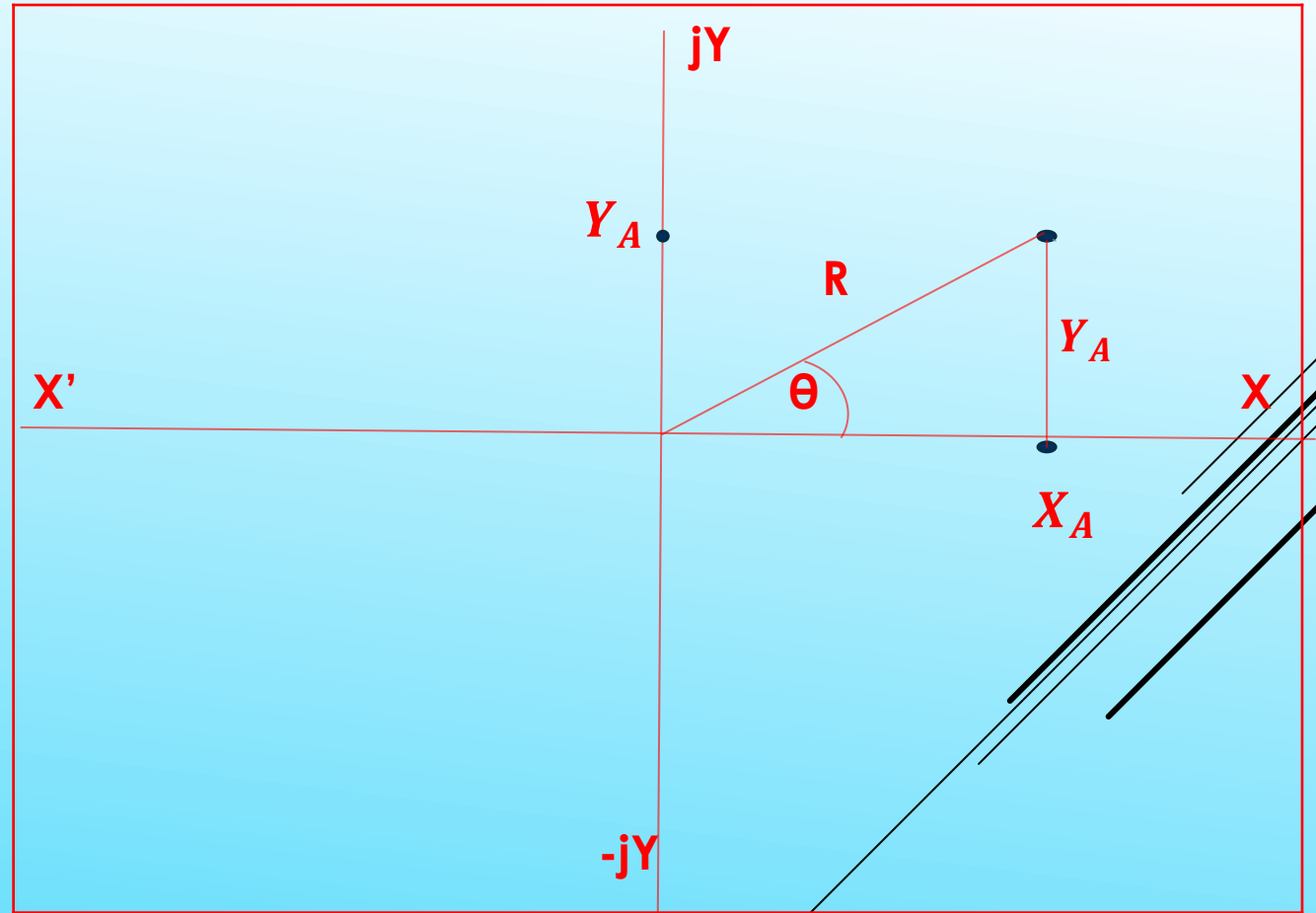
$$X_A + jY_A = \sqrt{X_A^2 + Y_A^2} \angle \tan^{-1}\left(\frac{Y_A}{X_A}\right)$$

Polar To Rect. :

$$X_A = R \cos \theta$$

$$Y_A = R \sin \theta$$

$$R \angle \theta = X_A + jY_A = |R| \cos \theta + j |R| \sin \theta$$



Example.....

$$(ক) 3+j4 = 5\angle 53^{\circ}7' \text{ (Ans)}$$

$$(খ) 4-j3 = 5\angle -36^{\circ}52' = 5\angle 360^{\circ}-36^{\circ}52' = 5\angle 323^{\circ}7' \text{ (Ans)}$$

$$(গ) 18\sqrt{34^{\circ}15'} = 18\angle -34^{\circ}15' = 18\cos(-34^{\circ}15') + j18\sin(-34^{\circ}15') \\ = 14.868 - j10.116 \text{ (Ans)}$$

$$(ঘ) 40 e^{-j120^{\circ}} = 40\angle -120^{\circ} = 40\cos(-120^{\circ}) + j40\sin(-120^{\circ}) \\ = -21 - j34.64 \text{ (Ans)}$$

যোগ- বিয়োগ , গুণ - ভাগ.....

(ক) $A=135\angle 120^\circ$, $B=120 - j75$, $A+B= ?$

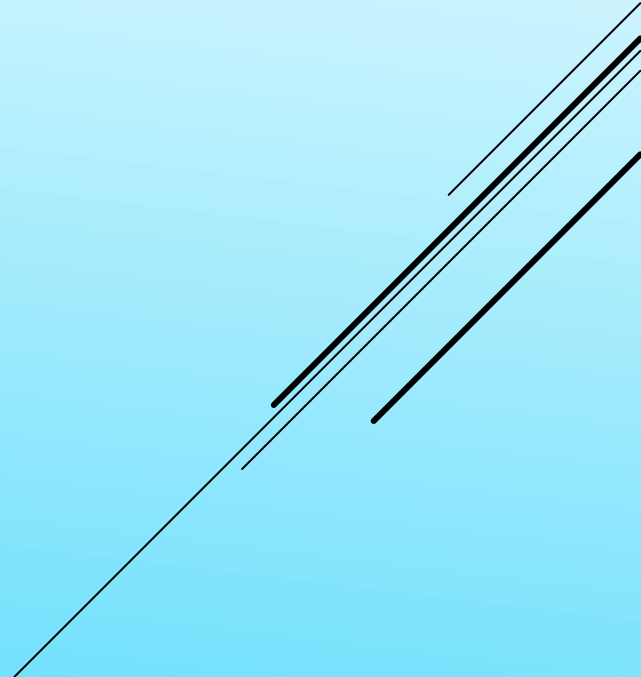
(খ) $(-6+j18) - (-8 - j30) = ?$

(গ) $A= -6.8\angle 23.6^\circ$, $B=25 - j6.35$, $C= 40 e^{-j120^\circ}$,

$$\frac{AB}{C} = ?$$

Home Work :

সকল গাণিতিক সমস্যার সমাধান



THANK YOU.....

