



Mahendra's

SSC CGL MAINS 2021

ADVANCE MATHS

Trigonometry को आसान कैसे बनाएं

Class 5 - > 90 अंश का

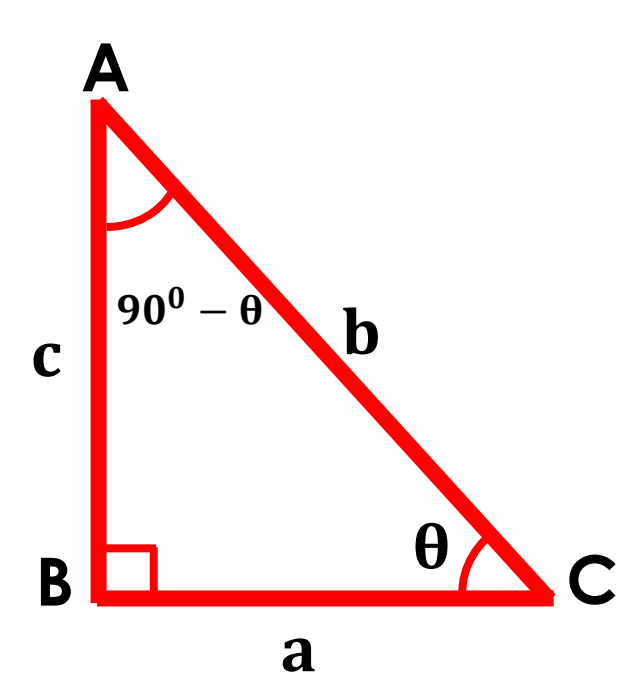
त्रिकोणमितीय अनुपात कैसे निकालें

पढ़ना नहीं, सीखना है

LIVE [📡] 9:30 PM



Trigonometric Ratio of Complementary Angles of a Right-Angle Triangle: एक समकोण त्रिभुज के पूरक कोणों का त्रिकोणमितिय अनुपात:



$$\sin \theta = \frac{P}{H} = \frac{c}{b}$$

$$\cos \theta = \frac{B}{H} = \frac{a}{b}$$

$$\tan \theta = \frac{P}{B} = \frac{c}{a}$$

$$\cot \theta = \frac{H}{P} = \frac{a}{c}$$

$$\sin (90^\circ - \theta) = \frac{P}{H} = \frac{a}{b}$$

$$\cos (90^\circ - \theta) = \frac{B}{H} = \frac{c}{b}$$

$$\tan (90^\circ - \theta) = \frac{P}{B} = \frac{a}{c}$$

$$\cot (90^\circ - \theta) = \frac{H}{P} = \frac{c}{a}$$

sin and cos are
complementary
T-ratios

tan and cot are
complementary
T-ratios

$$\sec \theta = \frac{H}{B} = \frac{b}{a}$$

$$\operatorname{cosec} \theta = \frac{H}{P} = \frac{b}{c}$$

$$\sec (90^\circ - \theta) = \frac{H}{B} = \frac{b}{c}$$

$$\operatorname{cosec} (90^\circ - \theta) = \frac{H}{P} = \frac{b}{a}$$

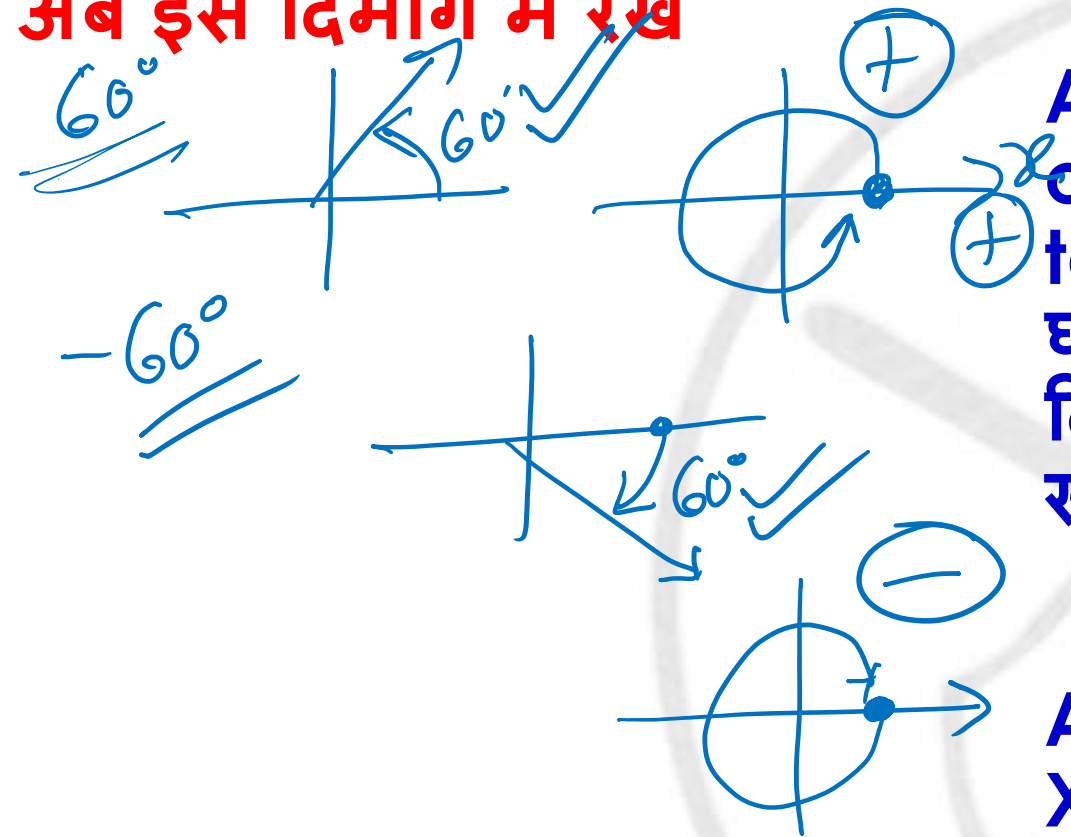
sec and cosec
are complementary
T-ratios

Now Keep it in Mind:
अब इसे दिमाग में रखें

$\sin \Leftrightarrow \cos$
 $\tan \Leftrightarrow \cot$

$\sin \xrightarrow{\text{Change}} \cos$
 $\tan \xrightarrow{\text{Change}} \cot$
 $\sec \xrightarrow{\text{Change}} \csc$

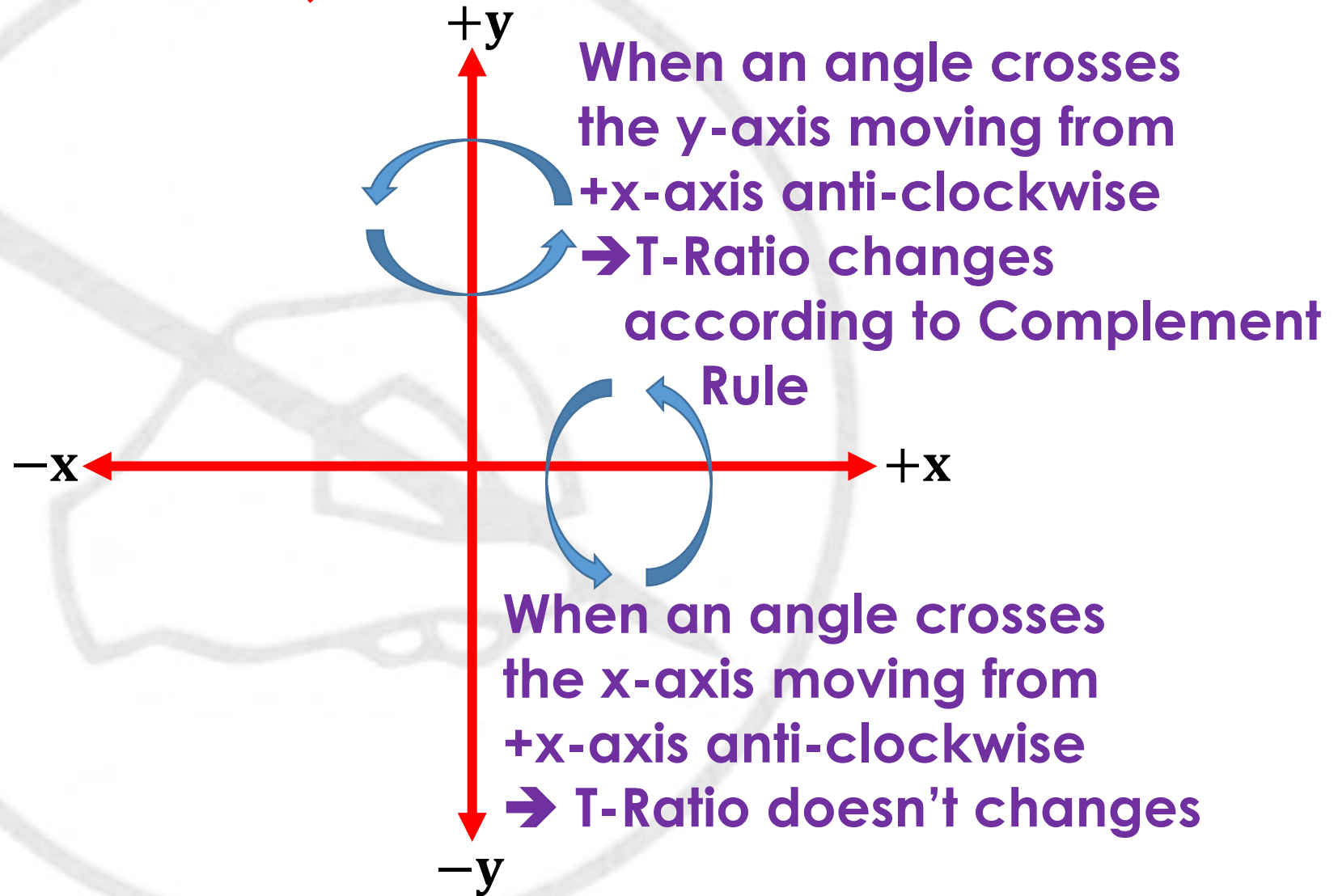
Now Keep it in Mind:
अब इसे दिमाग में रखें



Angle measured from positive direction of X-axis in anti-clock-wise direction is taken as positive angle and vice-versa. घड़ी की उल्टी दिशा में, X-अक्ष की धनात्मक दिशा से मापे गए कोण को धनात्मक कोण के रूप में लिया जाता है और विलोमतः।

Angle measured from positive direction of X-axis in clock-wise direction is taken as positive angle and vice-versa. घड़ी की दिशा में, X-अक्ष की धनात्मक दिशा से मापे गए कोण को ऋणात्मक कोण के रूप में लिया जाता है और विलोमतः।

When a T-Ratio changes to its Complement:
कोई त्रिकोणमितिय अनुपात कब अपने पूरक में परिवर्तित होता है:



Find $\sin 120^\circ$.
 $\sin 120^\circ$ ज्ञात कीजिये।

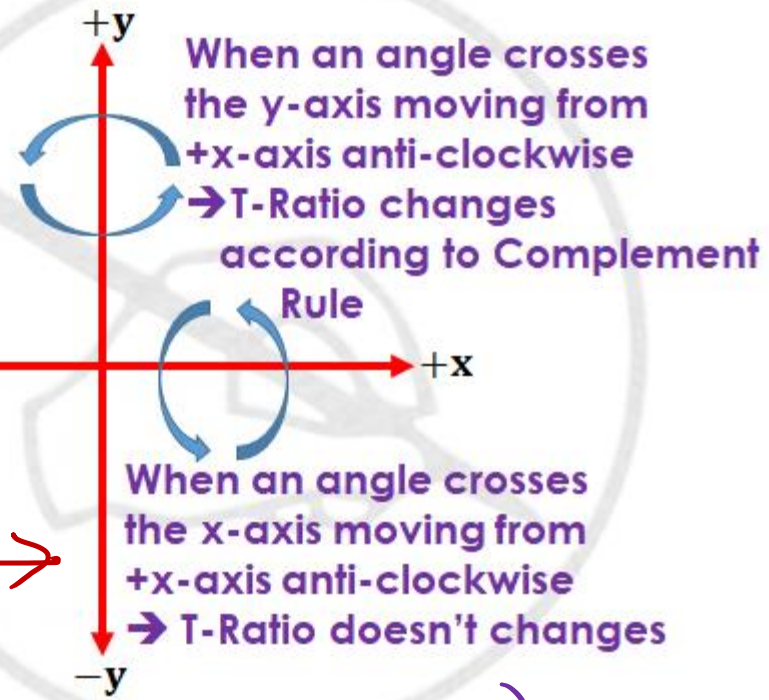
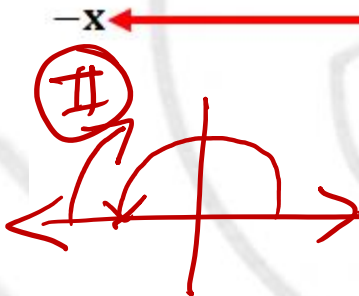
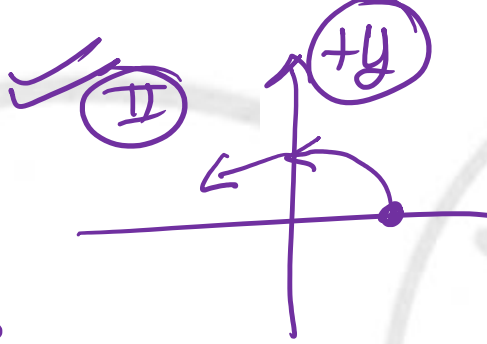
$90^\circ + 30^\circ$

$180^\circ - 60^\circ$

(I) $\sin 120^\circ$
 $\Rightarrow \sin (90^\circ + 30^\circ)$
 \downarrow
 $+\cos 30^\circ$
 $= \frac{\sqrt{3}}{2}$

(II) $\sin (+180^\circ - 60^\circ)$
 \downarrow
 $+\sin 60^\circ$

Same $= \frac{\sqrt{3}}{2}$



Find $\cos 120^\circ$.
 $\cos 120^\circ$ ज्ञात कीजिये।

(I) $90^\circ + 30^\circ$

(II) $180^\circ - 60^\circ$

$$(I) * \cos(90^\circ + 30^\circ)$$

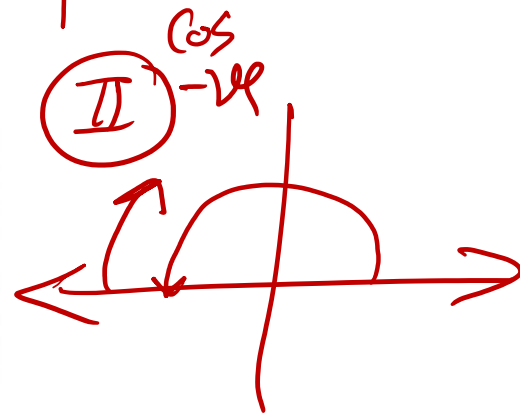
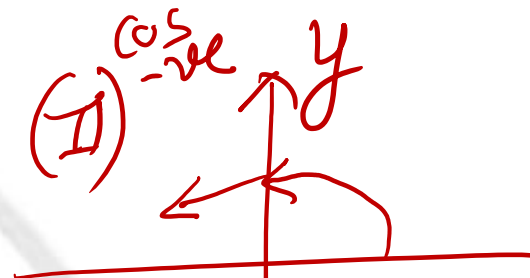
$$\Rightarrow -\sin 30^\circ$$

$$= -\frac{1}{2}$$

OR
(II) $\cos(+180^\circ - 60^\circ)$

$$\Rightarrow -\cos 60^\circ$$

$$= -\frac{1}{2}$$

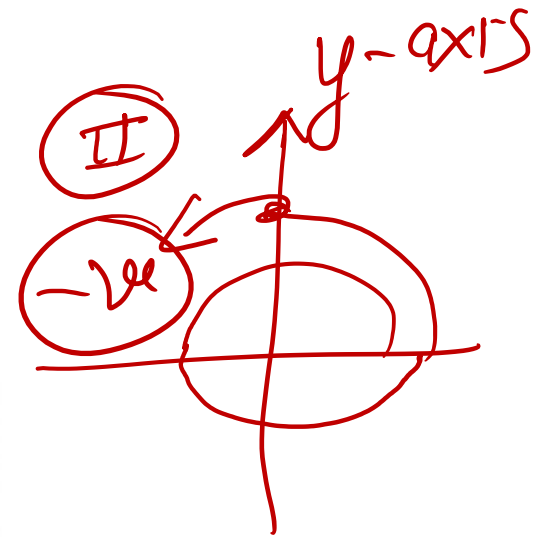


Find $\tan 480^\circ$.
 $\tan 480^\circ$ ज्ञात कीजिये।

$$\tan 480^\circ$$
$$* \tan (90^\circ \times 5 + \underline{30^\circ})$$

$$= -\cot 30^\circ$$

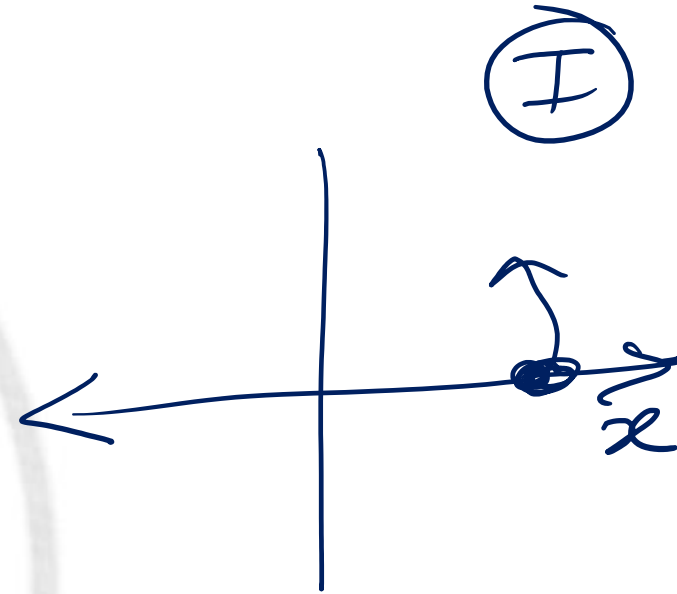
$$= -\sqrt{3} \text{ (Ans)}$$



Find $\cot 1860^\circ$.
 $\cot 1860^\circ$ ज्ञात कीजिये।

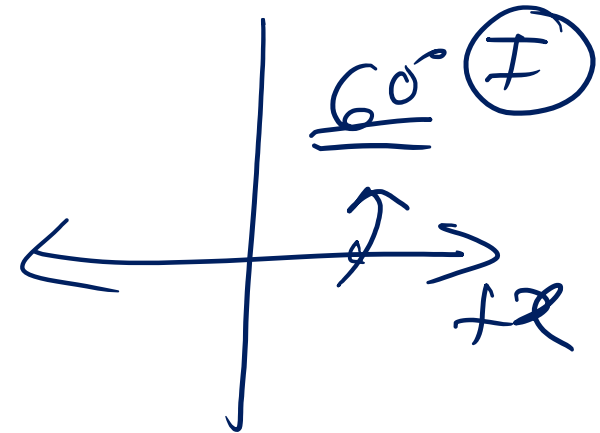
$$\begin{aligned} & \cot(1860^\circ) \\ & \cot(180^\circ \times 10 + 60^\circ) \\ & * \cot(360^\circ \times 5 + 60^\circ) \end{aligned}$$

$$\begin{aligned} & + \cot 60^\circ \\ & = + \frac{1}{\sqrt{3}} \end{aligned}$$



Find $\sin 1140^\circ$.
 $\sin 1140^\circ$ ज्ञात कीजिये।

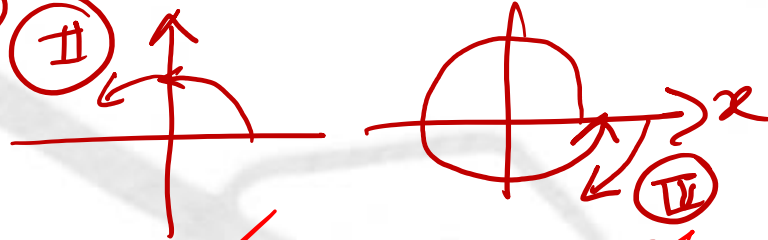
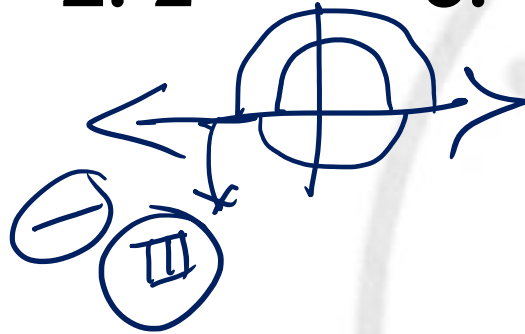
$$\begin{aligned} & \sin (1140^\circ) \\ & \sin (\underbrace{90^\circ \times 12}_{1080^\circ} + 60^\circ) \\ & = \cancel{*} \sin (180^\circ \times 6 + 60^\circ) \\ & + \sin 60^\circ \\ & = \frac{\sqrt{3}}{2} \quad \underline{\underline{\text{(Ans)}}} \end{aligned}$$



$$\frac{\cos(90^\circ + A) \cdot \sec(360^\circ - A) \cdot \tan(180^\circ - A)}{\sec(A - 720^\circ) \cdot \sin(A + 540^\circ) \cdot \cot(A - 90^\circ)} =$$

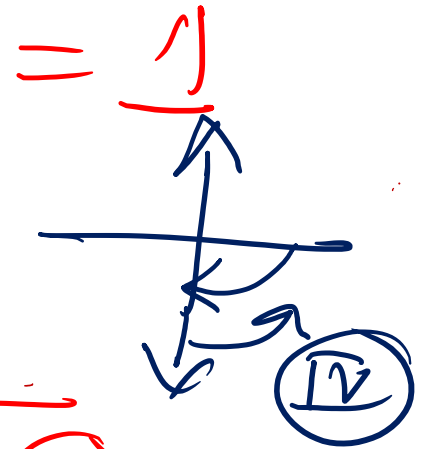
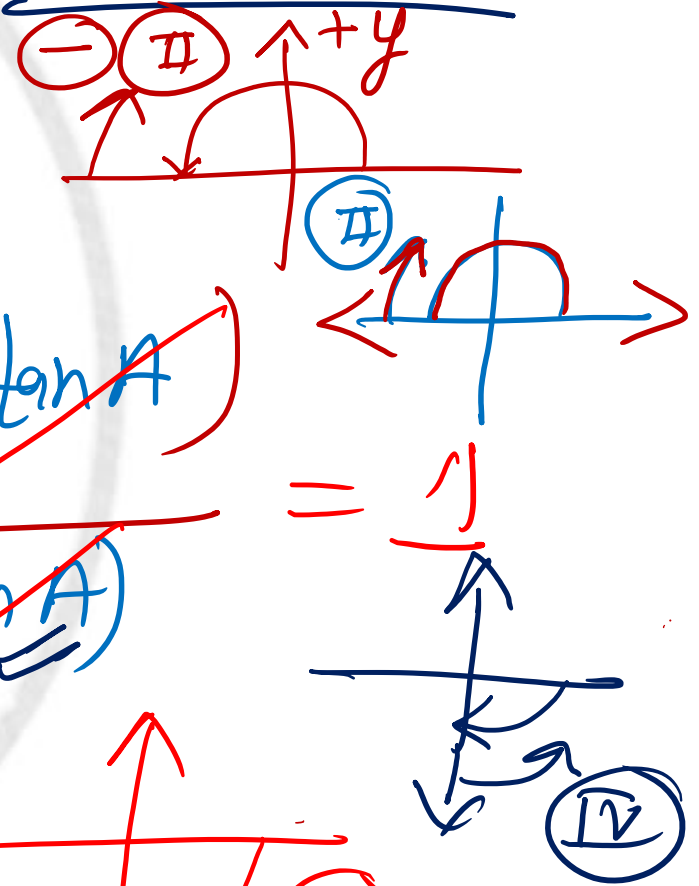
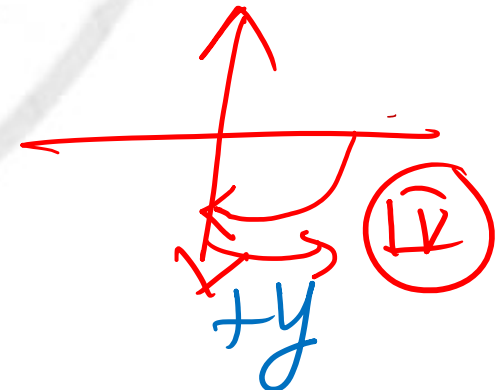
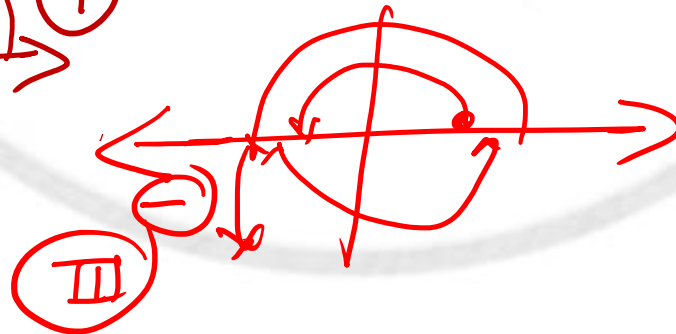
1. 1 2. 2 3. -2 4. -1

Asked in
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$$\frac{(-\sin A) (+\sec A) (-\tan A)}{(+\sec A) (-\sin A) (-\tan A)}$$

$$\frac{(+\sec A) (-\sin A) (-\tan A)}{(+\sec A) (-\sin A) (-\tan A)}$$



$$x = y \cos \frac{2\pi}{3} = z \cos \frac{4\pi}{3}; \text{ then } xy + yz + zx =$$

$$\text{1. 1} \quad \text{2. 2} \quad \text{3. 0} \quad \text{4. 3}$$

$$x = y \cos \frac{2\pi}{3} = z \cos \frac{4\pi}{3}; \text{ तो } xy + yz + zx = k(-2k) + (-2k)(-2k) + (-2k)(k)$$

$$= -2k^2 + 4k^2 - 2k^2 = 0$$

$$\text{put } \pi = 180^\circ$$

$$x = y \cos \left(\frac{2 \times 180^\circ}{3} \right) = z \times \cos \left(\frac{4 \times 180^\circ}{3} \right)$$

$$x = y \cdot \cos 120^\circ = z \cos 240^\circ$$

$$x = y \cos (180^\circ - 60^\circ) = z \cos (180^\circ + 60^\circ)$$



$$x = -y \cos 60^\circ = -z \cos 60^\circ$$

$$\Rightarrow x = -\frac{y}{2} = -\frac{z}{2} = k$$

$$\left. \begin{array}{l} x = k \\ y = -2k \\ z = -2k \end{array} \right\}$$



Mahendra's

पढ़ना नहीं, सीखना है,
केवल पढ़ना होता,
तो Selection सबका हो जाता...!!!

दुनिया में कुछ बनो या ना बनो,
एक अच्छा इंसान जरूर बनो ...!!!

Chapter/अध्याय: –
Trigonometry
त्रिकोणमिति

Next
16 April
Friday

