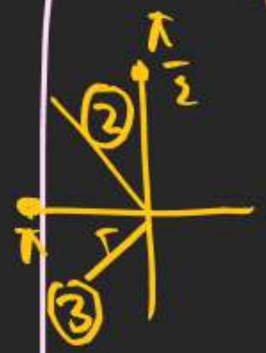
Q $\sin(-65^\circ) = -\sin 65^\circ$

Q $\cos 27^\circ \cdot \tan 27^\circ \cdot \tan 63^\circ \cdot \csc 63^\circ = ?$

$\cancel{\cos 27^\circ} \cdot \dfrac{\sin 27^\circ}{\cancel{\cos 27^\circ}} \cdot \dfrac{\sin 63^\circ}{\cos 63^\circ} \cdot \csc 63^\circ$

$\sin(90-63^\circ) \cdot \dfrac{\cancel{\sin 63^\circ}}{\cos 63^\circ} \times \dfrac{1}{\cancel{\sin 63^\circ}}$

$+\cancel{\cos 63^\circ} \times \dfrac{1}{\cancel{\cos 63^\circ}} = 1$



$\dfrac{\cancel{\cos\theta}}{(+\cancel{\cos\theta})} + \dfrac{+\cancel{\sin\theta}}{(+\cancel{\sin\theta})} - \dfrac{(+\cancel{\cot\theta})}{\cancel{\cot\theta}}$

$1 + 1 + 1 = 3$

Q $\dfrac{\cos\theta}{\sin(90+\theta)} + \dfrac{\sin(-\theta)}{\sin(180+\theta)} - \dfrac{\tan(90+\theta)}{\cot\theta}$

3

② $(\frac{\pi}{2}+\theta)$ ③ $(\pi+\theta)$ ② $\pi/2$

$= 3$

Q $\dfrac{\sin 135^\circ - \cos 120^\circ}{\sin 135^\circ + \cos 120^\circ} = 3+2\sqrt{2}$

$\sin\left(\frac{9\pi}{2}+45^\circ\right) = +\cos 45$ 2

Q $\sin(-65^\circ) = -\sin 65^\circ$

Q $\cos 27^\circ \cdot \tan 27^\circ \cdot \tan 63^\circ \cdot \operatorname{cosec} 63^\circ = ?$

$\cancel{\cos 27^\circ} \cdot \frac{\sin 27^\circ}{\cancel{\cos 27^\circ}} \cdot \frac{\sin 63^\circ}{\cos 63^\circ} \cdot \operatorname{cosec} 63^\circ$

$\sin(90-63^\circ) \cdot \frac{\cancel{\sin 63^\circ}}{\cos 63^\circ} \times \frac{1}{\cancel{\sin 63^\circ}}$

$+\cos \cancel{63^\circ} \times \frac{1}{\cos \cancel{63^\circ}} = 1$

$$\frac{\sin 135^\circ - \cos 120^\circ}{\sin 135^\circ + \cos 120^\circ}$$

$$\frac{\frac{1}{\sqrt{2}} + \left(+\frac{1}{2}\right)}{\frac{1}{\sqrt{2}} + \left(-\frac{1}{2}\right)} = \frac{\frac{\sqrt{2}+1}{\cancel{2\sqrt{2}}}}{\frac{\sqrt{2}-1}{\cancel{2\sqrt{2}}}}$$

Rat

$$= \frac{\sqrt{2}+1}{\sqrt{2}-1} \times \frac{\sqrt{2}+1}{\sqrt{2}+1}$$

$$= \frac{(\sqrt{2}+1)^2}{(\sqrt{2})^2 - 1^2} = \frac{2+1+2\sqrt{2}}{2-1} = \frac{}{1}$$

$$= 3+2\sqrt{2}$$

Q $$\frac{\sin 135^\circ - \cos 120^\circ}{\sin 135^\circ + \cos 120^\circ} = 3+2\sqrt{2}$$

Q $\sin(-65°) = -\sin 65°$

Q $\cos 27° \cdot \underline{\tan 27°} \cdot \tan 63° \cdot \csc 63° = ?$

$\cancel{\cos 27°} \cdot \frac{\sin 27°}{\cancel{\cos 27°}} \cdot \frac{\sin 63°}{\cos 63°} \cdot \csc 63°$

$\underline{\sin}(90-63°) \cdot \frac{\cancel{\sin 63°}}{\cos 63°} \times \frac{1}{\cancel{\sin 63°}}$

$+\cos \cancel{63°} \times \frac{1}{\cos \cancel{63°}} = 1$

Q. $\dfrac{\tan(\overset{\boxed{2}}{90+\theta}) \cdot \csc(\overset{\overset{3}{\pi+\theta}}{180+\theta})}{\cos(\underset{\pi+\theta}{180+\theta})\ \csc(-\theta)} = -1$

$\dfrac{(-\cancel{\cot\theta}) \overset{3}{\times} (-\cancel{\csc\theta})}{(+\cancel{\cot\theta}) \times -\cancel{\csc\theta}}$

$= -1$

Q $4\cot^2 45^\circ - \sec^2 60^\circ + \sin^2 30^\circ = \frac{1}{4}$

=

Q $\tan^2\frac{\pi}{6} + \tan^2\frac{\pi}{4} + \tan^2\frac{\pi}{3} = \frac{13}{3}$.

R.

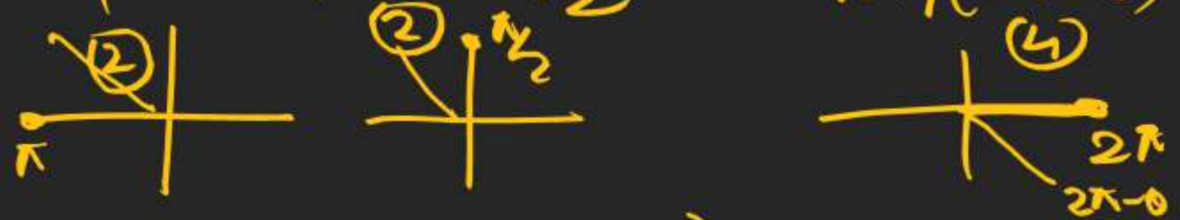
Q6 $4\times(1)^2 - (2)^2 + \left(\frac{1}{2}\right)^2$

$4 - 4 + \frac{1}{4} = \frac{1}{4}$

Q7 $\tan^2 30 + \tan^2 45 + \tan^2 60$

$\left(\frac{1}{\sqrt{3}}\right)^2 + (1)^2 + (\sqrt{3})^2 = \frac{1}{3} + 1 + 3 = 4 + \frac{1}{3} = \frac{13}{3}$

Q $\tan\theta + \tan(\pi-\theta) + \cot\left(\frac{\pi}{2}+\theta\right) - \tan(2\pi-\theta)$



$\tan\theta + \cancel{(-\tan\theta)} + (-\tan\theta) + \cancel{(+\tan\theta)}$

$= 0$

Nishant Jindal

Complementry Angles

When Sum of 2 Angle $= \frac{\pi}{2}$ both are Complementry Angle

$(\theta \ \& \ 90-\theta)$

$30^\circ \ \& \ 60^\circ$ ✓

$-30^\circ \ \& \ 120^\circ$ ✓

$\sin(90-\theta) = \cos\theta$

$\cos(90-\theta) = \sin\theta$

$\tan(90-\theta) = \cot\theta$

$\cot(90-\theta) = \tan\theta$

$\operatorname{cosec}(90-\theta) = \sec\theta$

$\sec(90-\theta) = \operatorname{cosec}\theta$

sin, cos

tan, cot

sec cosec are Complementry Trigo fxn

Supplimentry Angle

When Sum of 2 angles are 180°

$30^\circ, 150^\circ$

$90^\circ, 90$

$60^\circ, 120$

$-30, 210^\circ$

Supplimentry

(2)

$\sin(\pi-\theta) = +\sin\theta$

$\cos(\pi-\theta) = -\cos\theta$

$\tan(\pi-\theta) = -\tan\theta$

$\cot(\pi-\theta) = -\cot\theta$

$\sec(\pi-\theta) = -\sec\theta$

$\operatorname{cosec}(\pi-\theta) = +\operatorname{cosec}\theta$

Nishant Jindal

Q If ABCD is cyclic Quad. then S.T.

$$\cos A+\cos B+\underline{\cos C}+\cos D=0$$

$$A+C=\pi,\quad B+D=\pi$$

$$\cos A+\cos B+\cos(\overset{2}{\pi}-A)+\cos(\overset{2}{\pi}-B)$$

$$\cancel{\cos A}+\cancel{\cos B}-\cancel{\cos}A-\cancel{\cos}B$$

$$=0$$

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	①		
1	$\sin 1^R > 0$	$\cos 1^c > 0$	$\tan 1^c > 0$
②	$\sin 2^c > 0$	$\cos 2^c < 0$	$\tan 2^c < 0$
2	$\sin 3^c > 0$	$\cos 3^c < 0$	$\tan 3^c < 0$
3	$\sin 4^c < 0$	$\cos 4^c < 0$	$\tan 4^c > 0$
4	$\sin 5^c < 0$	$\cos 5^c > 0$	$\tan 5^c < 0$
4	$\sin 6^c < 0$	$\cos 6^c > 0$	$\tan 6^c < 0$
1	$\sin 7^c > 0$	$\cos 7^c > 0$	$\tan 7^c > 0$

$1^c \simeq 57^\circ \longrightarrow 1^{st}$

$2^c \simeq 114^\circ \longrightarrow 2^{n}$

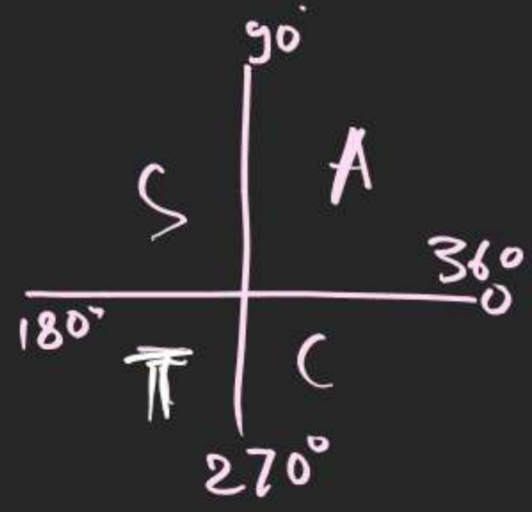
$3^c \simeq 171^\circ \longrightarrow 2^{n}$

$4^c = 228^\circ = 3^{rd}$

$5^c = 285^\circ = 4^{th}$

$6^c = 342^\circ = 4^{th}$

$7^c = 399^\circ = 1^{st}$



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Q $\sin 85^\circ = \cos 5^\circ$ [T/F] ✓

$90^\circ = \text{Sum}$.

Q $\tan 27^\circ = \cot 63^\circ$ [T/F] ✓

Comp. Sum $= 90^\circ$

$\tan 27^\circ = \tan(90 - 63^\circ) = \cot 63^\circ$

Q. $\dfrac{\cot 54^\circ}{\tan 36^\circ} + \dfrac{\tan 20^\circ}{\cot 70^\circ} = ?$

$20^\circ + 70^\circ = 90^\circ$

$54 + 36^\circ = 90^\circ$

$\dfrac{\cancel{\cot 54^\circ}}{\cancel{\tan 36^\circ}}1 + \dfrac{\cancel{\tan 20^\circ}}{\cancel{\cot 70^\circ}}1 = 1 + 1 = 2$

* $\cot 54^\circ = \cot(90 - 36^\circ) = \tan 36^\circ$

$\tan 20^\circ = \tan(90 - 70^\circ) = \cot 70^\circ$

5 - 85°

1 17 Pairs

Q $\sin^2 5^\circ + \sin^2 10 + \sin^2 15^\circ + \ldots + \boxed{\sin^2 75^\circ} + \boxed{\sin^2 80^\circ} + \boxed{\sin^2 85^\circ} + \sin^2 90$

$\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ \qquad \cos^2 15^\circ + \cos^2 10^\circ + \cos^2 5 + 1^2$

$\underbrace{1 + 1 + 1 + \ldots + 1}_{\leftarrow 8 \text{ Pairs} \rightarrow} + \sin^2 45^\circ + \frac{1}{}$

$8 + 1 + \frac{1}{2} = 9 + \frac{1}{2} = \frac{19}{2}$

$\sin 85^\circ = \cos 5^\circ$

$\sin 80^\circ = \cos 10^\circ$

Nishant Jindal

$\sin^2 5 + \sin^2 10^\circ + \sin^2 15 + \sin^2 20^\circ + \sin^2 25^\circ + \sin^2 30 + \sin^2 35 + \sin^2 40 + \frac{1}{2} + \cos^2 40 + \cos^2 35 + \cos^2 30 + \cos^2 25 + \cos^2 20 + \cos^2 15^\circ + \cos^2 10 + \cos^2 5 + 1$

55 60 65 70 75 80 85

$1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + \frac{1}{2} + 1 = 9.5$

Q $\sum_{r=1}^{89^\circ} \log_{10}(\tan r^\circ)$

$\log_{10}\tan 1^\circ + \log\tan 2^\circ + \log\tan 3^\circ + \cdots - \log\tan 87^\circ + \log\tan 88^\circ + \log\tan 89^\circ$

$\tan 1^\circ \times \cot 1^\circ$

$\tan\theta \times \cot\theta = 1$

$= \log\{\tan 1^\circ \tan 2^\circ \cdot \tan 3^\circ \cdots - \boxed{\tan 45^\circ} - \tan 87^\circ \tan 88^\circ \tan 89^\circ\}$

$\tan 45^\circ = 1$

$\{\cot 3^\circ \cot 2^\circ \cot 1^\circ\}$

$= \log\{\tan 1^\circ \tan 2^\circ \tan 3^\circ$

44 Pair

$= \log\{1\} = 0$

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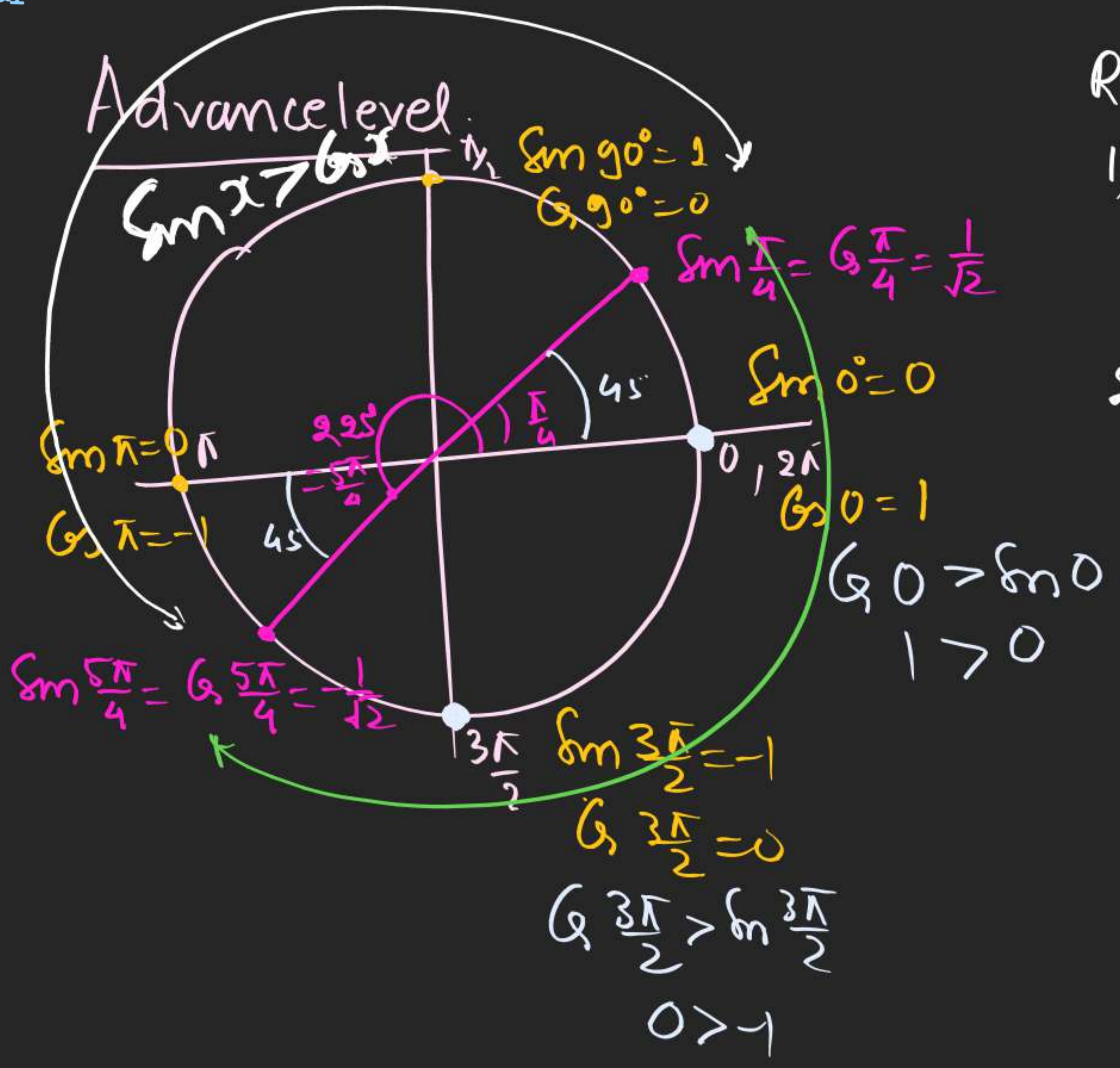
Advance level



Rk

1) $\theta \in (45° - 225°)$

$\theta \in \left(\frac{\pi}{4}, \frac{5\pi}{4}\right) \rightarrow \sin\theta > \cos\theta$

2) $\theta \in \left(\frac{5\pi}{4}, \frac{\pi}{4}\right) \rightarrow \cos\theta > \sin\theta$

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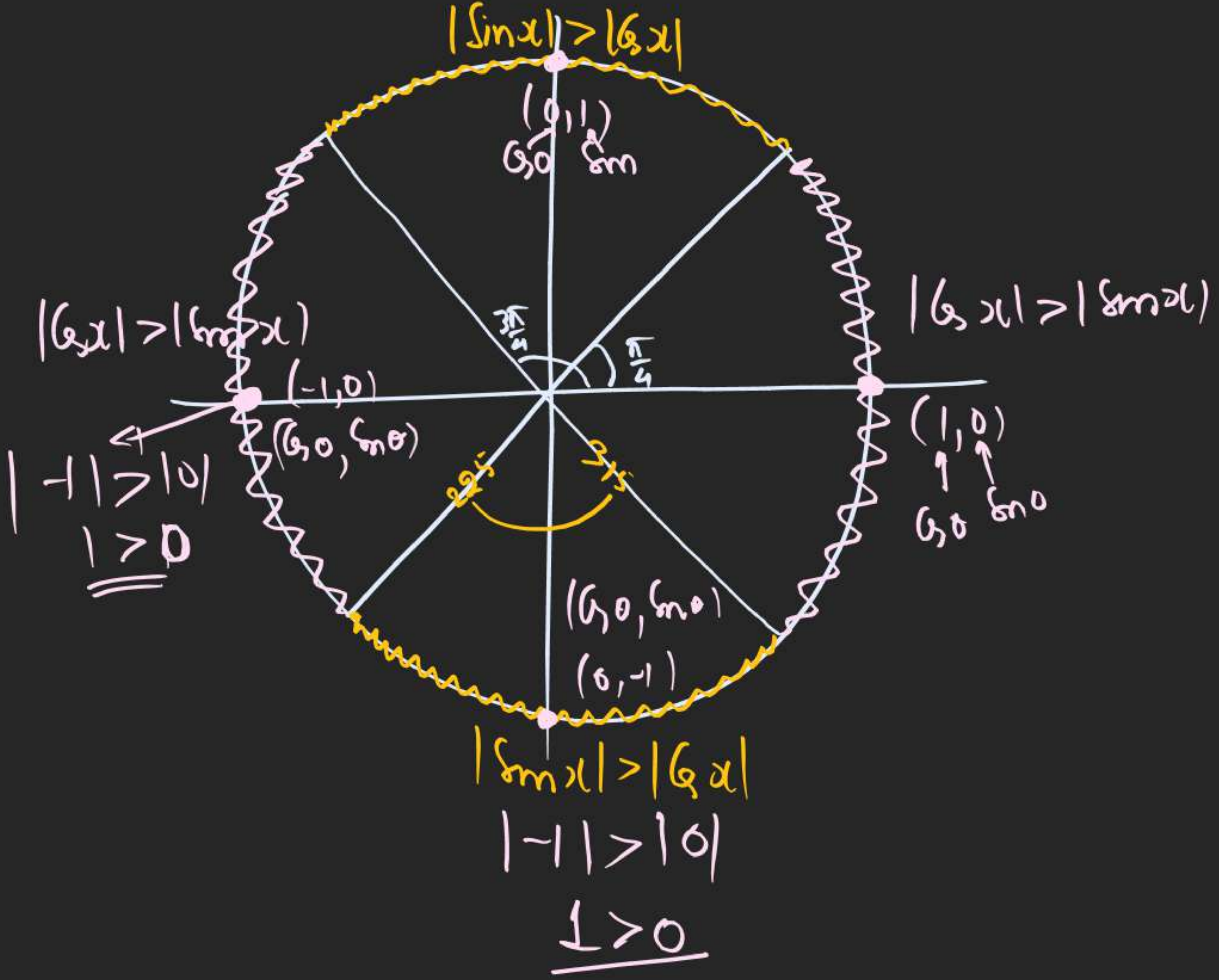

$\sin\theta$ = Y coord

$\cos\theta$ = x coord

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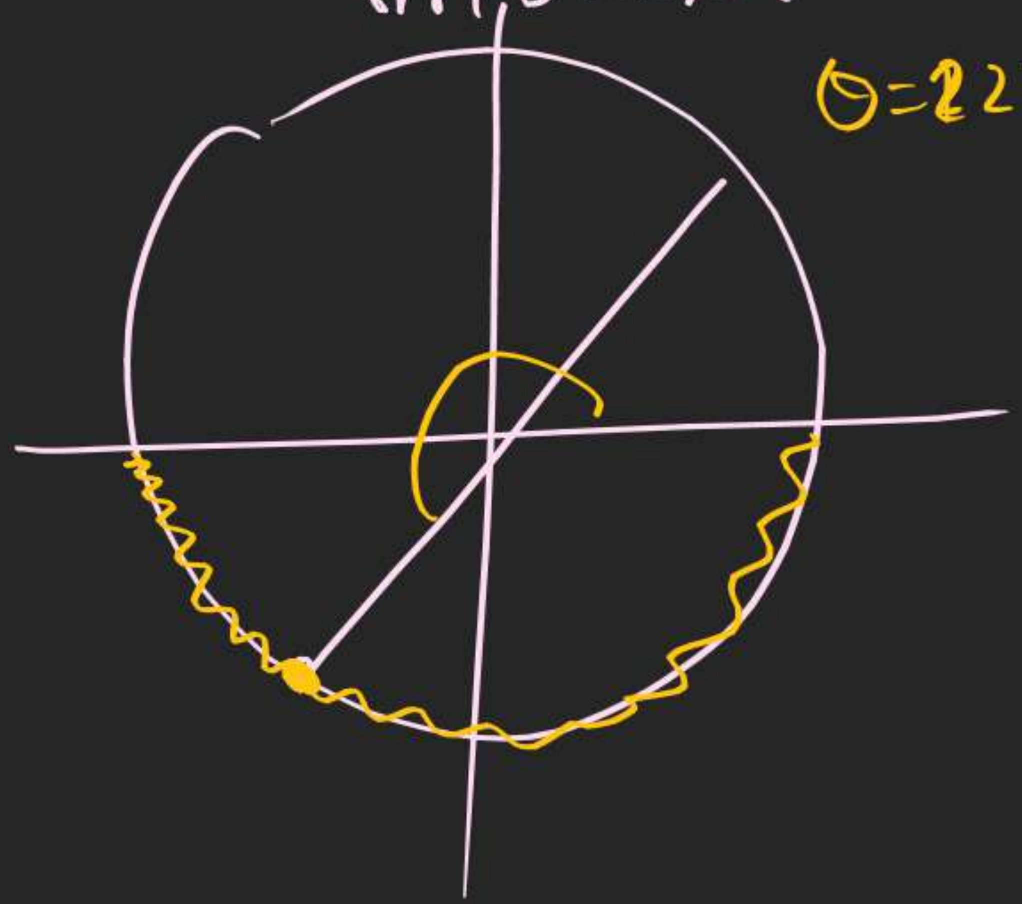
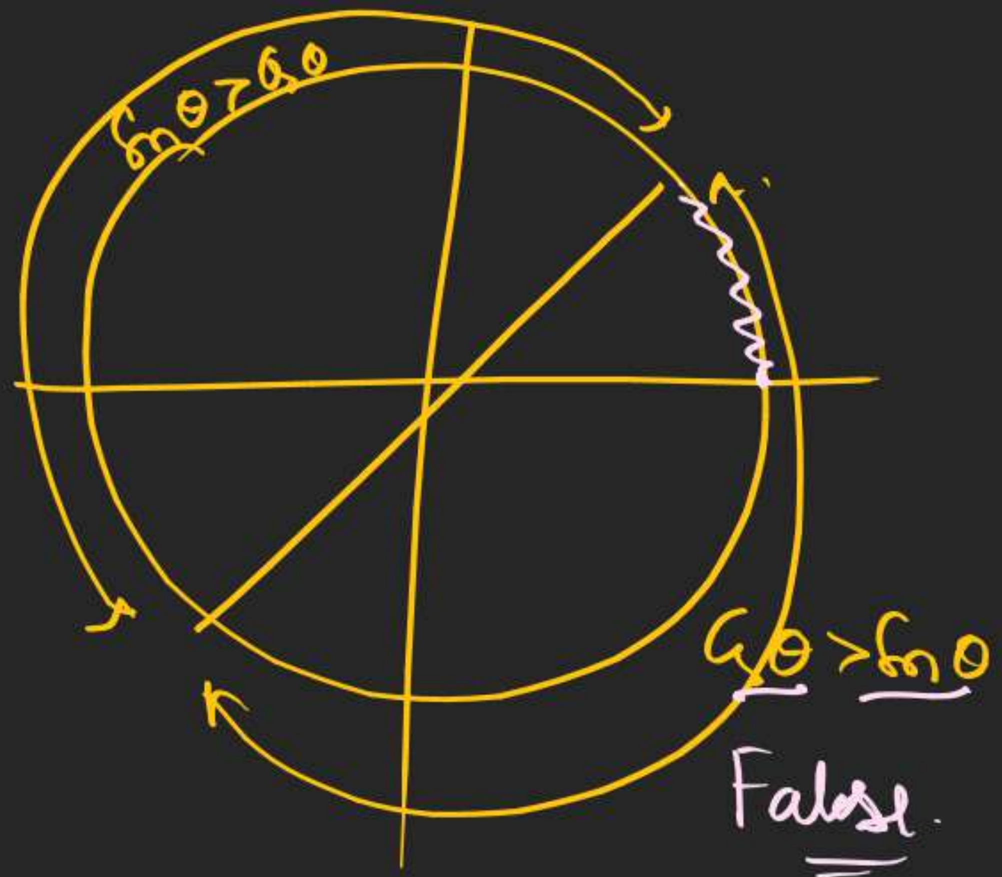
Q angle $\boxed{180^\circ < \theta < 360^\circ}$ for what value $\sin\theta = \cos\theta$?

$\theta = 225^\circ$



Q If $\theta \in [0, 45^\circ)$ then $\cos\theta < \sin\theta$ [T/F] ?

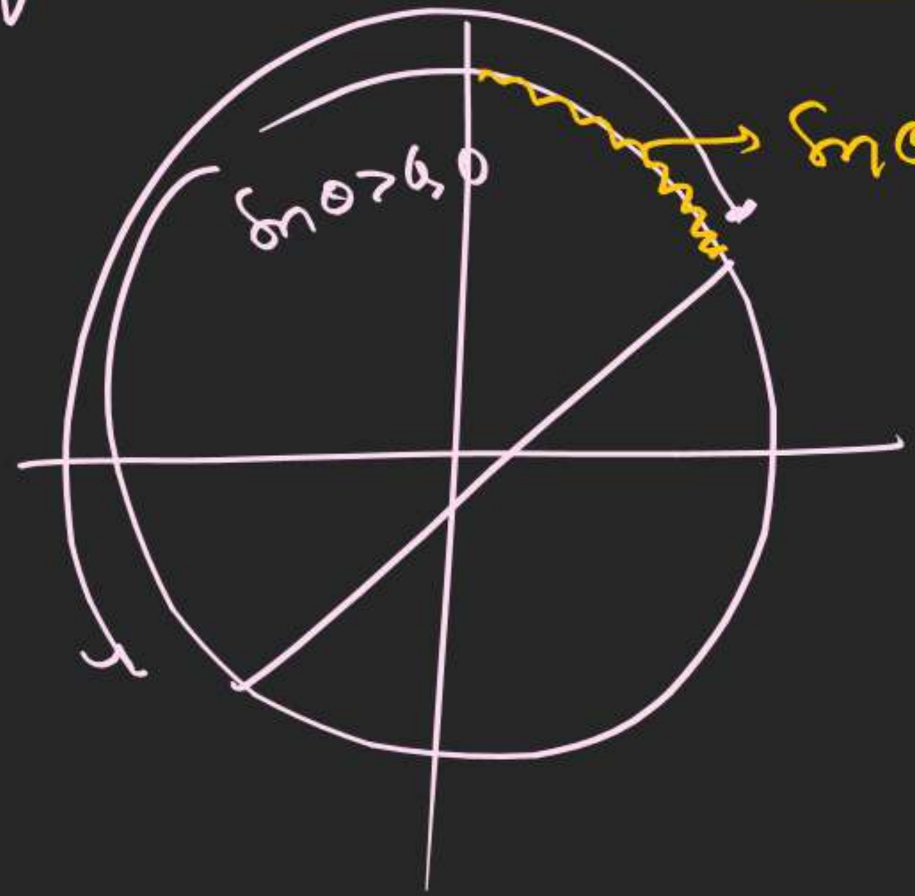


Q If $\theta \in (45^\circ, 90^\circ]$ then $\sin\theta < \cos\theta$ [T/F]

False

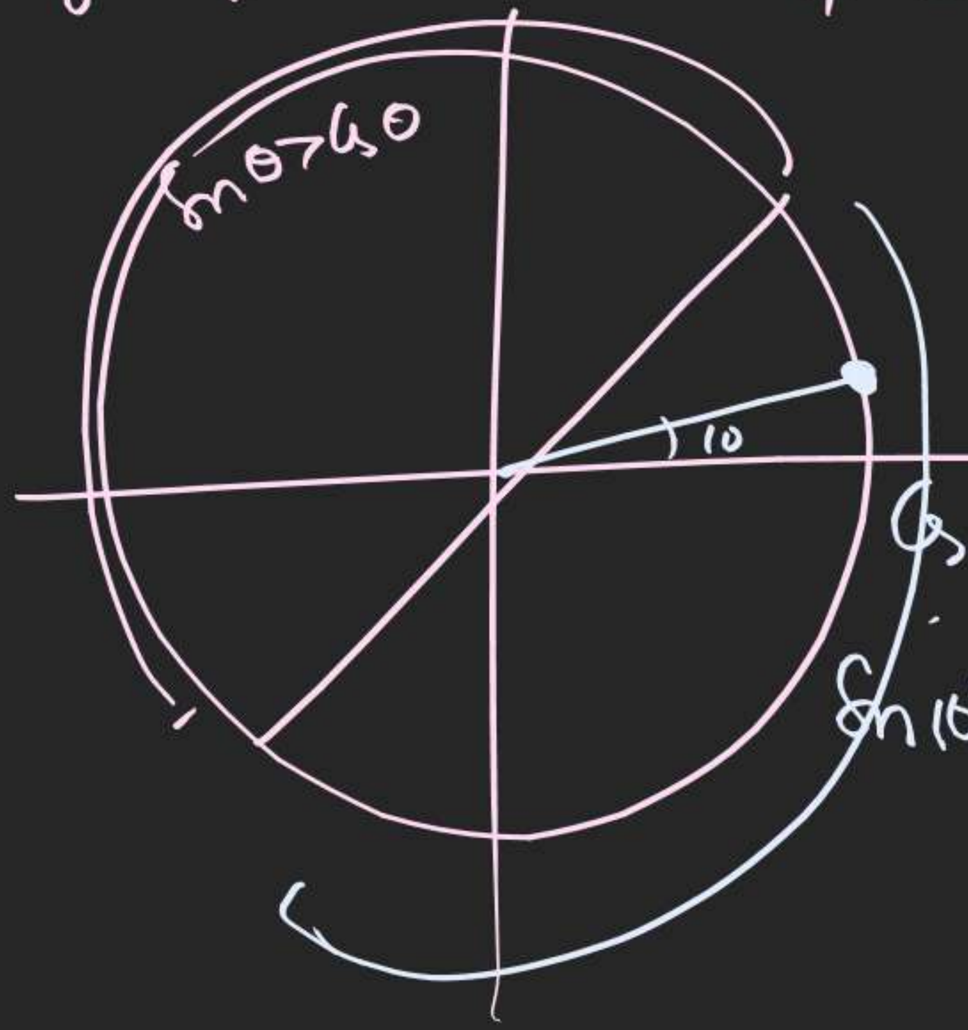
$\sin\theta > \cos\theta$

cos.



Q Sign of $\sin 10^\circ - \cos 10^\circ$

+ − 0 NOT



$\cos 10^\circ > \sin 10^\circ$

$\sin 10^\circ - \cos 10^\circ < 0$

$\boxed{-ve}$

Q For a Pentagon angles are

$\theta_1 < \theta_2 < \theta_3 < \theta_4 < \theta_5$

find value of

$$\frac{\sin(\theta_1+\theta_2)}{\sin(\theta_3+\theta_4+\theta_5)} + \frac{\sin(\theta_1+\theta_2+\theta_3)}{\sin(\theta_4+\theta_5)}$$

Sum of all Interior Angle $= (n-2)\pi$

$= (5-2)\pi$

$$\boxed{\theta_1+\theta_2+\theta_3+\theta_4+\theta_5 = 3\pi}$$

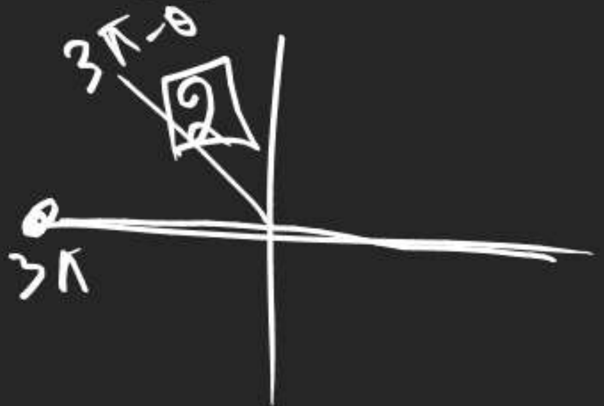
$\theta_3+\theta_4+\theta_5 = 3\pi-(\theta_1+\theta_2)$

$\theta_1+\theta_2+\theta_3 = 3\pi-(\theta_4+\theta_5)$

$$\frac{\sin(\theta_1+\theta_2)}{\sin(3\pi-(\theta_1+\theta_2))} + \frac{\sin(3\pi-(\theta_4+\theta_5))}{\sin(\theta_4+\theta_5)}$$

$$\frac{\cancel{\sin(\theta_1+\theta_2)}}{\cancel{\sin(\theta_1+\theta_2)}} + \frac{\cancel{\sin(\theta_4+\theta_5)}}{\cancel{\sin(\theta_4+\theta_5)}} = 1+1 = 2$$

$\star$ $\sin(3\pi-\theta) = +\sin\theta$



Nishant Jindal

Adhe Se Kam / Aadhe se Jyada

Q $\left(1+\cos\frac{\pi}{6}\right)\left(1+\cos\frac{\pi}{3}\right)\left(1+\cos\frac{2\pi}{3}\right)\left(1+\cos\frac{5\pi}{6}\right)$

$\left(1+\cos\frac{\pi}{6}\right)\left(1+\cos\frac{2\pi}{6}\right)\left(1+\cos\boxed{\frac{4\pi}{6}}\right)\left(1+\cos\boxed{\frac{5\pi}{6}}\right)$

$\boxed{2}$ $\boxed{2}$

" " $\left(1+\cos\left(\pi-\frac{2\pi}{6}\right)\right)\left(1+\cos\left(\pi-\frac{\pi}{6}\right)\right)$

$\left(1+\cos\frac{\pi}{6}\right)\left(1+\cos\frac{2\pi}{6}\right)\left(1-\cos\frac{2\pi}{6}\right)\left(1-\cos\frac{\pi}{6}\right)$

$\left(1^2-\cos^2\left(\frac{\pi}{6}\right)\right)\left(1^2-\cos^2\left(\frac{2\pi}{6}\right)\right)$

$\sin^2\left(\frac{\pi}{6}\right)\cdot\sin^2\left(\frac{\cancel{2}\pi}{\cancel{6}3}\right)$

$\sin^2 30 \times \sin^2 60^2 = \left(\frac{1}{2}\right)^2 \times \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{1}{4}\times\frac{3}{4} = \frac{3}{16}$

Q s जब भी Series में हो

(1) last के 2, 3 Dekho

(2) 3 वाले Angle में Nr > half of Dr हो तो $(\pi-\theta)$ Ki tarah treat Karo

(4) $\frac{4\pi}{6}$ → Nr = 4
Dr = 6 का half = 3
Nr > Dr K half
4 > 3

5) $\frac{4\pi}{6} = \frac{6\pi-2\pi}{6} = \pi-\frac{2\pi}{6}$

$\frac{5\pi}{6} = \frac{6\pi-\pi}{6} = \pi-\frac{\pi}{6}$