



# SSC GD CONSTABLE 2023



## सफलता का महामंत्र **DAY-11**

# Trigonometry

(त्रिकोणमिति)

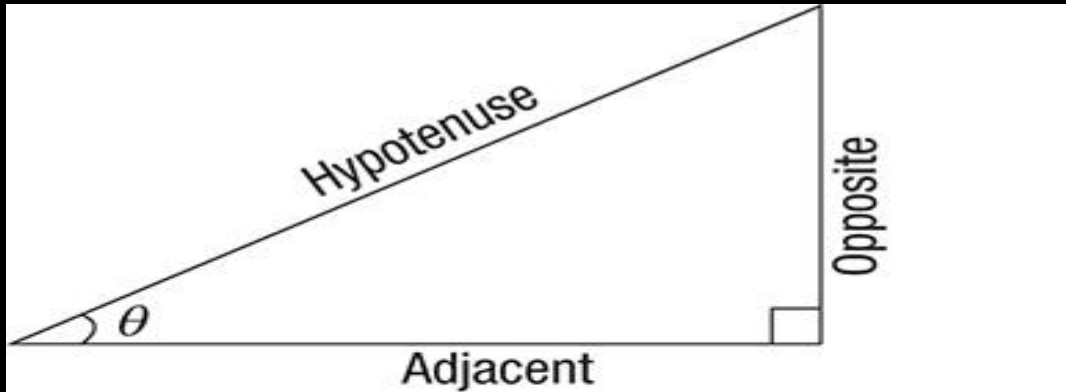


## MATHS

LIVE 05:00 PM 



# SSC GD 2023 (सफलता का महामंत्र)



$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

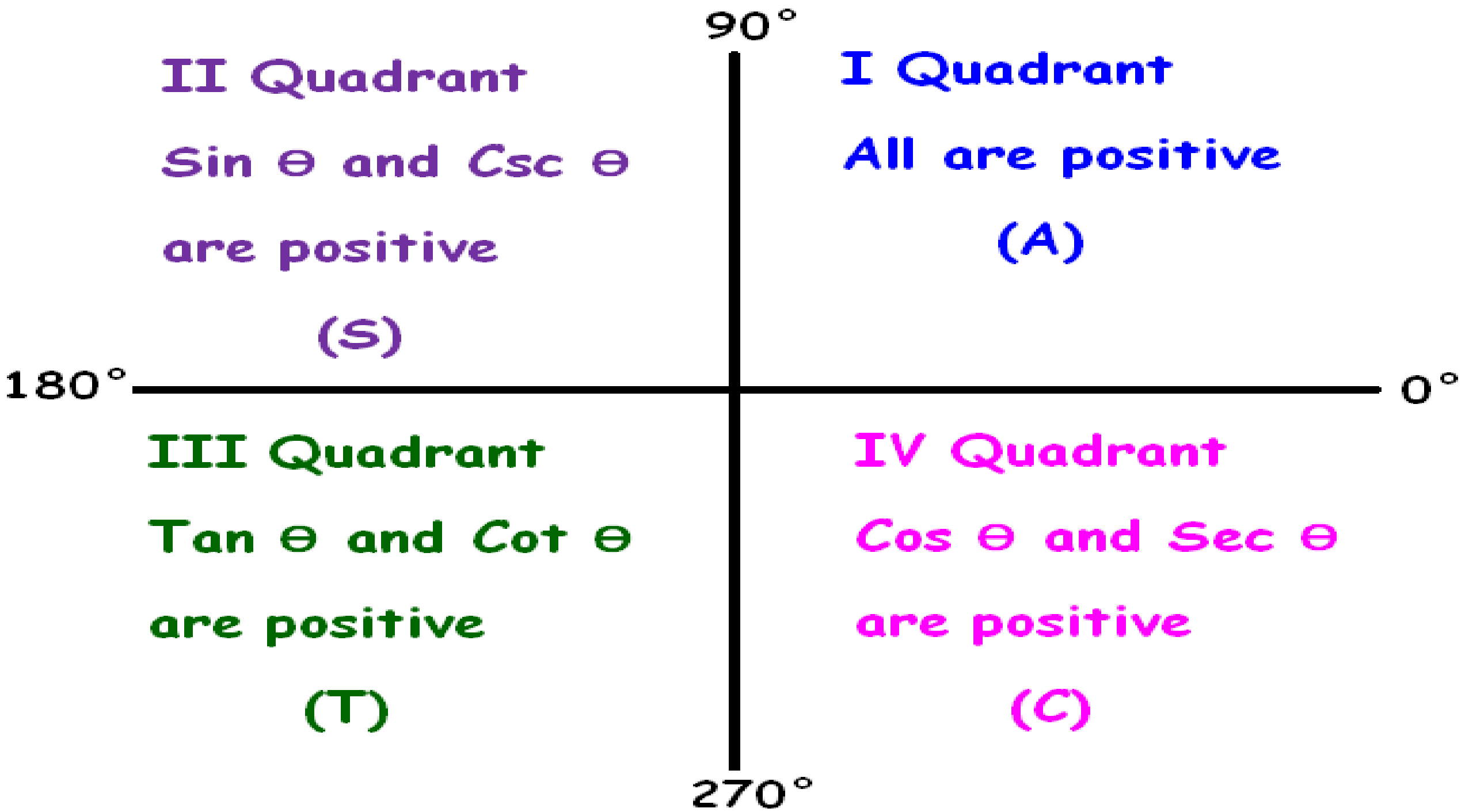
$$\csc \theta = \frac{\text{hypotenuse}}{\text{opposite}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\sec \theta = \frac{\text{hypotenuse}}{\text{adjacent}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\cot \theta = \frac{\text{adjacent}}{\text{opposite}}$$



$\theta$	$0^\circ$	$30^\circ$	$45^\circ$	$60^\circ$	$90^\circ$
$\sin \theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan \theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not defined
$\cot \theta$	Not defined	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0
$\sec \theta$	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	Not defined
$\operatorname{cosec} \theta$	Not defined	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1

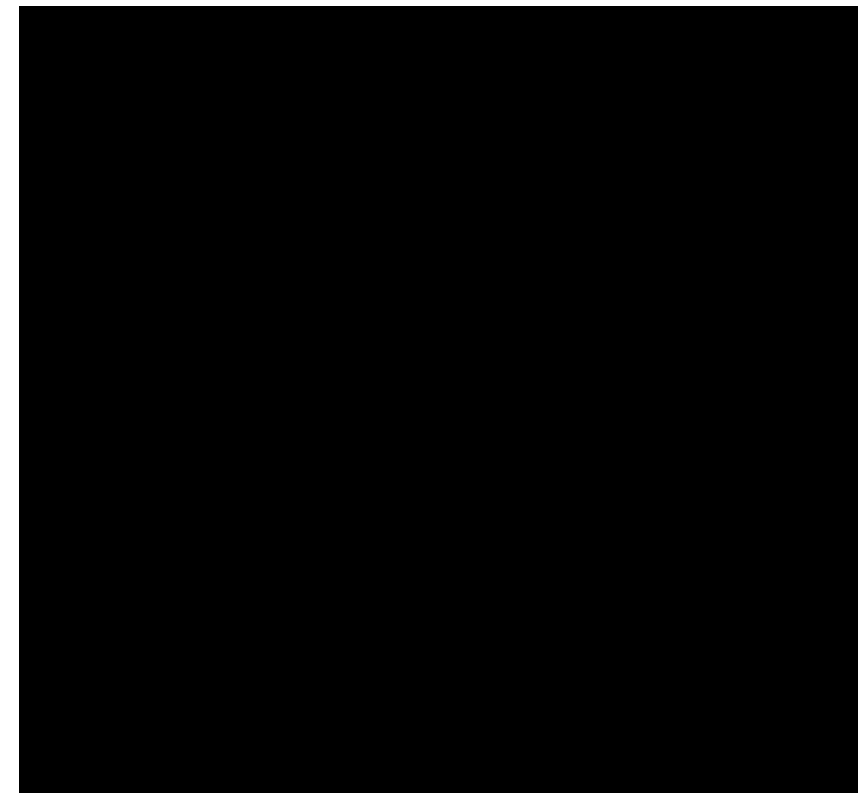
- $\sin (A + B) = \sin A \cos B + \cos A \sin B$
- $\sin (A - B) = \sin A \cos B - \cos A \sin B$
- $\cos (A + B) = \cos A \cos B - \sin A \sin B$
- $\cos (A - B) = \cos A \cos B + \sin A \sin B$
- $\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$
- $\tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$
- $\sin (A + B) \sin (A - B) = \sin^2 A - \sin^2 B = \cos^2 B - \cos^2 A$
- $\cos (A + B) \cos (A - B) = \cos^2 A - \sin^2 B = \cos^2 B - \sin^2 A$
- $\sin 2A = 2 \sin A \cos A = \frac{2 \tan A}{1 + \tan^2 A}$
- $\cos 2A = \cos^2 A - \sin^2 A = 1 - 2 \sin^2 A = 2 \cos^2 A - 1 = \frac{1 - \tan^2 A}{1 + \tan^2 A}$
- $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$
- $\sin 3A = 3 \sin A - 4 \sin^3 A = 4 \sin(60^\circ - A) \sin A \sin(60^\circ + A)$
- $\cos 3A = 4 \cos^3 A - 3 \cos A = 4 \cos(60^\circ - A) \cos A \cos(60^\circ + A)$
- $\tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3 \tan^2 A} = \tan(60^\circ - A) \tan A \tan(60^\circ + A)$

## Trigonometric Identities

$$(1) \cos^2 \theta + \sin^2 \theta = 1$$

$$(2) 1 + \tan^2 \theta = \sec^2 \theta$$

$$(3) 1 + \cot^2 \theta = \operatorname{cosec}^2 \theta$$





## For any angles A, B, C

- $\sin (A + B + C) = \sin A \cos B \cos C + \cos A \sin B \cos C + \cos A \cos B \sin C - \sin A \sin B \sin C$
- $\cos (A + B + C) = \cos A \cos B \cos C - \cos A \sin B \sin C - \sin A \cos B \sin C - \sin A \sin B \cos C$
- $\tan (A + B + C) = \frac{\tan A + \tan B + \tan C - \tan A \tan B \tan C}{1 - \tan A \tan B - \tan B \tan C - \tan A \tan C}$  ;
- $\cot (A + B + C) = \frac{\cot A \cot B \cot C - \cot A - \cot B - \cot C}{\cot A \cot B + \cot B \cot C + \cot A \cot C - 1}$

## If A, B, C are angles of a triangle (or $A + B + C = \pi$ ):

- $\sin A \cos B \cos C + \cos A \sin B \cos C + \cos A \cos B \sin C = \sin A \sin B \sin C$
- $\cos A \sin B \sin C + \sin A \cos B \sin C + \sin A \sin B \cos C = 1 + \cos A \cos B \cos C$
- $\tan A + \tan B + \tan C = \tan A \tan B \tan C$
- $\cot B \cot C + \cot C \cot A + \cot A \cot B = 1$
- $\tan \frac{B}{2} \tan \frac{C}{2} + \tan \frac{C}{2} \tan \frac{A}{2} + \tan \frac{A}{2} \tan \frac{B}{2} = 1$
- $\cot \frac{A}{2} + \cot \frac{B}{2} + \cot \frac{C}{2} = \cot \frac{A}{2} \cot \frac{B}{2} \cot \frac{C}{2}$
- $\sin 2A + \sin 2B + \sin 2C = 4 \sin A \sin B \sin C$
- $\cos 2A + \cos 2B + \cos 2C = -1 - 4 \cos A \cos B \cos C$
- $\cos^2 A + \cos^2 B + \cos^2 C = 1 - 2 \cos A \cos B \cos C$
- $\sin A + \sin B + \sin C = 4 \cos \frac{A}{2} \cos \frac{B}{2} \cos \frac{C}{2}$
- $\cos A + \cos B + \cos C = 1 + 4 \sin \frac{A}{2} \sin \frac{B}{2} \sin \frac{C}{2}$



# SSC GD 2023 (सफलता का महामंत्र)





If  $\cos x = \frac{1}{\sqrt{5}}$ , find the value of  $\tan x$

(1) 2

(2) 3

(3) 4

(4) 6





if  $\tan A = 5/12$  then find the value of the  $\frac{\sin A + \cos A - \tan A}{\sec A + \operatorname{cosec} A - \cot A}$

(1) 995/689

(2) 885/43

(3) 432/445

(4) Not



$\cos 25^\circ = \frac{1}{\sqrt{5}}$  then find the value of  $\cos 65^\circ + \tan 25^\circ$

(1)  $\frac{2+\sqrt{5}}{2\sqrt{5}}$

(2)  $\frac{2+\sqrt{5}}{\sqrt{5}}$

(3)  $\frac{1+\sqrt{5}}{\sqrt{5}}$

(4) none



$\sin 21^\circ = \frac{x}{y}$ , then find the value of  $\sec 21^\circ - \sin 69^\circ$

- 1)  $\frac{y^2}{x\sqrt{y^2-x^2}}$
- 2)  $\frac{x^2}{x\sqrt{y^2-x^2}}$
- 3)  $\frac{y^2}{x\sqrt{x^2-y^2}}$
- 4) -not



63°14'51" into radian /रेडियन में ज्ञात करे

(1)  $\frac{2811\pi}{8000}$

(2)  $\frac{5811\pi}{8000}$

(3)  $\frac{1811\pi}{8000}$

(4)  $\frac{6811\pi}{8000}$



What will be the value of / मान ज्ञात करे  $(m^2 + n^2)\cos^2\beta$

$$\frac{\cos\alpha}{\cos\beta} = m \text{ and } \frac{\cos\alpha}{\sin\beta} = n$$

(1)  $mn$

(2)  $m^2$

(3)  $n^2$

(4)  $0$



In triangle / त्रिभुज ABC angle  $A=90^\circ$

BC = a, AC = b, AB = c, then find/तो ज्ञात करे  $\tan B$

+ $\tan C = ?$

(1)  $\frac{a^2}{bc}$

(2)  $\frac{c^2}{ab}$

(3)  $\frac{b^2}{ac}$

(4)  $\frac{c^2+a^2}{bc}$



What will be the value of / मान ज्ञात करे  
 $\tan 315^\circ \cot(-405^\circ)$

(1) 0

(2) 2

(3) 1

(4) -1



What will be the value of / मान ज्ञात करे

$$A = \tan 11^\circ \tan 29^\circ, B = \frac{2}{3}(\cot 61^\circ \cot 79^\circ)$$

(1)  $4A=6B$

(2)  $A=2B$

(3) A is not equal to B

(4)  $2A=B$





What will be the value of / मान ज्ञात करे  $\cos X$

$$\frac{1}{\cos x} - \frac{1}{\cot x} = \frac{1}{p}$$

(1)  $\frac{2p}{p^2+1}$

(2)  $\frac{p}{p^2+1}$

(3)  $\frac{p^2}{p^2+1}$

(4)  $1/p$



What will be the value of / मान ज्ञात करे  $\frac{\tan^2 x + 1}{\tan^2 x - 1}$

$$\frac{\sin x + \cos x}{\sin x - \cos x} = 5/4$$

(1)  $\frac{40}{41}$

(2)  $\frac{41}{40}$

(3)  $\frac{30}{41}$

(4)  $\frac{39}{41}$



What will be the value of / मान ज्ञात करे  $\tan 3x$   
 $\tan 7x \tan 2x = 1$

(1)  $\frac{1}{\sqrt{3}}$

(2)  $\sqrt{3}$

(3) 1

(4) not



What will be the value of / मान ज्ञात करे  $\sin x + \cos x$

$$\sec x + \tan x = 2 + \sqrt{5}$$

(1)  $\frac{3}{2}$

(2)  $\frac{3}{\sqrt{5}}$

(3)  $\frac{7}{9}$

(4) not



What will be the value of / मान ज्ञात करे  $\frac{\sqrt{1-\sin x}}{\sqrt{1+\sin x}}$

$$\tan X = \frac{8}{15}$$

(1)  $1/\sqrt{3}$

(2)  $3/5$

(3)  $2/5$

(4)  $0$



What will be the value of / मान ज्ञात करे  $\cos X$   
if  $\operatorname{cosec} X - \cot X = 5$

(1)  $13/15$

(2)  $12/11$

(3)  $11/15$

(4)  $12/13$



What will be the value of / मान ज्ञात करे  
 $\sin 10^\circ + \sin 20^\circ + \sin 30^\circ \dots \dots \sin 360^\circ$

(1) 22.5

(2) 45

(3) 22

(4) not