

Zeal Education

MCQ Material

Standard 10, 11 Science, 12 Science, JEE, NEET

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STD : 10 Gujarati Medium (GSEB)

Practice Sheet : MATHS

CHAPTER 09 - ત્રિકોણમિતિ

Instruction: This sheet use for individual practice purpose. It's free....

(1) $\frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ} = \dots\dots\dots$

- (a) $\frac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) $\frac{\sqrt{3}}{2}$ (d) એકપણ નહિં

Ans : B

(2) $\tan \theta \cdot \operatorname{cosec} \theta = \dots\dots\dots$

- (a) $\sin \theta$ (b) $\cot \theta$ (c) $\tan \theta$ (d) $\sec \theta$

Ans : D

Hint : $\tan \theta \cdot \operatorname{cosec} \theta = \frac{\sin \theta}{\cos \theta} \cdot \frac{1}{\sin \theta} = \frac{1}{\cos \theta} = \sec \theta$

(3) $(\sin 80 - \cos 10)(\sin 80 + \cos 10) = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) -1

Ans : A

(4) $\tan^2 \theta - \sec^2 \theta = \dots\dots\dots$

- (a) 0 (b) 1 (c) -1 (d) એકપણ નહિં

Ans : C

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

(5) $\sin \theta = \cos 30$ હોય તો $2 \tan^2 \theta - 1 = \dots\dots\dots(0 < \theta < 90)$

- (a) 5 (b) $2\sqrt{3} - 1$ (c) 7 (d) 6

Ans : A

(6) $2 \sin 30^\circ + 2 \tan 45^\circ - 3 \cos 60^\circ + 2 \cos^2 30^\circ = \dots\dots\dots$

- (a) 0 (b) 3 (c) 1 (d) -1

Ans : B

Hint : $2 \sin 30^\circ + 2 \tan 45^\circ - 3 \cos 60^\circ + 2 \cos^2 30^\circ$

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

(7) જો $3 \sin \theta = 4 \cos \theta$ હોય, તો $\tan^2 \theta = \dots\dots\dots$

- (a) $\frac{16}{25}$ (b) $\frac{9}{16}$ (c) $\frac{16}{9}$ (d) $\frac{25}{16}$

Ans : C

Hint : $3 \sin \theta = 4 \cos \theta$ $\therefore \frac{\sin^2 \theta}{\cos^2 \theta} = \frac{16}{9}$

$$\therefore \frac{\sin \theta}{\cos \theta} = \frac{4}{3} \quad \therefore \tan^2 \theta = \frac{16}{9}$$

(8) $\frac{1}{2 - \sin^2 \alpha} + \frac{1}{2 + \sin^2 \alpha} = \dots\dots\dots$
 (a) 2 (b) 0 (c) 1 (d) 1

Ans : C

(9) $\sin \theta + \cos \theta = 1$ હોય તો $\sin \theta \cdot \cos \theta = \dots\dots\dots$
 (a) 2 (b) 0 (c) 1 (d) -1

Ans : B

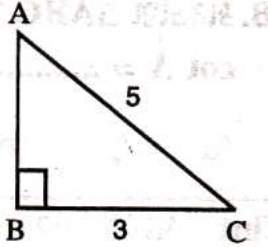
(10) જો $\sin \theta = 3x$ તથા $\cos \theta = 5x$ હોય, તો $\cot \theta = \dots\dots\dots$ થાય.
 (a) $\frac{5}{3}$ (b) $\frac{3}{5}$ (c) $\frac{4}{3}$ (d) $\frac{3}{4}$

Ans : A

(11) ΔABC માં $m\angle B = 90^\circ$. જો $BC = 3$, $AC = 5$ તો $\operatorname{cosec} C = \dots\dots\dots$
 (a) $\frac{4}{5}$ (b) $\frac{3}{4}$ (c) $\frac{4}{3}$ (d) $\frac{5}{4}$

Ans : D

Hint :



પાઈથાગોરસના પ્રમેય પરથી,

$$AC^2 = AB^2 + BC^2$$

$$5^2 = AB^2 + 3^2$$

$$25 - 9 = AB^2$$

$$16 = AB^2$$

$$4 = AB$$

હવે, $\operatorname{cosec} C = \frac{AC}{AB}$

$$\operatorname{cosec} C = \frac{5}{4}$$

(12) $\frac{\sec 1^\circ \cdot \sec 2^\circ \dots \sec 88^\circ \cdot \sec 89^\circ}{\operatorname{cosec} 89^\circ + \operatorname{cosec} 88^\circ \dots \operatorname{cosec} 2^\circ \cdot \operatorname{cosec} 1^\circ}$ નું મૂલ્ય = $\dots\dots\dots$
 (a) 0 (b) -1 (c) 1 (d) એકપણ નહિ

Ans : C

(13) $\frac{\cos 40^\circ}{\sin 50^\circ} = \cot \theta^\circ$ હોય, તો $\cot \theta^\circ = \dots\dots\dots$
 (a) 45° (b) 15° (c) 30° (d) 60°

Ans : A

(14) $\sec^2 \theta - 1 - \tan^2 \theta = \dots\dots\dots$
 (a) 0 (b) 1 (c) 2 (d) 3

Ans : A

Hint : $\sec^2 \theta - 1 - \tan^2 \theta - \tan^2 \theta = 0$

(15) $\frac{\sqrt{1 + \cot^2 \theta}}{\sec \theta} = \dots\dots\dots$

- (a) $\sec \theta$ (b) $\tan \theta$ (c) $\cot \theta$ (d) $\tan^2 \theta$

Ans : C

Hint : $\frac{\sqrt{1 + \cot^2 \theta}}{\sec \theta} = \frac{\sqrt{\operatorname{cosec}^2 \theta}}{\sec \theta} = \frac{\operatorname{cosec} \theta}{\sec \theta} = \frac{1}{\frac{\sin \theta}{\cos \theta}} = \frac{\cos \theta}{\frac{1}{\sin \theta}} = \cot \theta$

(16) $\sin 45^\circ \cdot \cos 30^\circ + \cos 45^\circ \cdot \sin 30^\circ = \dots\dots\dots$

- (a) $\frac{\sqrt{6} + \sqrt{2}}{2}$ (b) $\frac{\sqrt{6} + 2}{4}$ (c) $\frac{\sqrt{6} + \sqrt{2}}{4}$ (d) $\frac{\sqrt{6} + \sqrt{2}}{2}$

Ans : C

(17) $\operatorname{cosec}^2 38^\circ - 1 + \cot^2 \theta^\circ$ છેલ્લું, તો $\theta^\circ = \dots\dots\dots$

- (a) 68° (b) 32° (c) 38° (d) 35°

Ans : C

(18) $\cos 45^\circ \cdot \sec 45^\circ = \tan \theta^\circ$ છેલ્લું, તો $\theta^\circ = \dots\dots\dots$

- (a) 30° (b) 45° (c) 15° (d) 60°

Ans : B

Hint : $\cos 45^\circ \cdot \sec 45^\circ = \tan \theta$

$\therefore \frac{1}{\sqrt{2}}(\sqrt{2}) = \tan \theta$

$\therefore (1) = \tan \theta$

$\therefore \tan 45^\circ = \tan \theta$

$\therefore \theta = \boxed{45^\circ}$

(19) $(a \sin \theta + b \cos \theta)^2 + (a \sin \theta - b \cos \theta)^2 = \dots\dots\dots$

- (a) 1 (b) $a^2 - b^2$ (c) $a + b$ (d) $a^2 + b^2$

Ans : D

(20) $\sin^2 60^\circ - \tan 45^\circ + \cos^2 30^\circ - \sin 90^\circ = \dots\dots\dots$

- (a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) 2 (d) $\frac{2}{3}$

Ans : A

(21) $\dots\dots\dots - \tan^2 \theta = 1$

- (a) $\sec \theta$ (b) $\cos^2 \theta$ (c) $\sec^2 \theta$ (d) $\cot^2 \theta$

Ans : C

(22) $\frac{1}{\sec \theta} = \dots\dots\dots$

- (a) $\cos \theta$ (b) $\sin \theta$ (c) $\cot \theta$ (d) $\tan \theta$

Ans : A

(23) જો $\sin \theta : \cos \theta = 2 : 3$ છેલ્લું તો $\tan \theta = \dots\dots\dots$

- (a) $\frac{3}{2}$ (b) $\frac{2}{3}$ (c) $\frac{3}{5}$ (d) $\frac{5}{3}$

Ans : B

Hint : $\sin \theta : \cos \theta = 2 : 3$

$$\therefore \frac{\sin \theta}{\cos \theta} = \frac{2}{3}$$

$$\therefore \tan \theta = \frac{2}{3}$$

(24) $\frac{\operatorname{cosec} 48^\circ}{\sec 42^\circ} - \frac{\sec 42^\circ}{\operatorname{cosec} 48^\circ} = \dots\dots\dots$

- (a) 1 (b) 0 (c) 2 (d) એકપણ નહિં

Ans : B

(25) $\sqrt{\frac{1+\cos \theta}{1-\cos \theta}} = \dots\dots\dots$

- (a) $\frac{1}{\operatorname{cosec} \theta - \cot \theta}$ (b) $\frac{1}{\operatorname{cosec} \theta + \cot \theta}$
 (c) $\operatorname{cosec} \theta + \cot \theta$ (d) $\operatorname{cosec} \theta - \cot \theta$

Ans : A

$$\begin{aligned} \text{Hint : } \sqrt{\frac{1+\cos \theta}{1-\cos \theta}} &= \sqrt{\frac{(1+\cos \theta)(1-\cos \theta)}{(1-\cos \theta)(1-\cos \theta)}} \\ &= \sqrt{\frac{1-\cos^2 \theta}{(1-\cos \theta)^2}} = \sqrt{\frac{\sin^2 \theta}{(1-\cos \theta)^2}} \\ &= \frac{\sin \theta}{1-\cos \theta} = \frac{\frac{\sin \theta}{\sin \theta}}{\frac{1-\cos \theta}{\sin \theta}} \\ &= \frac{1}{\operatorname{cosec} \theta - \cot \theta} \end{aligned}$$

(26) $\frac{\sin^2 60}{1-\cos^2 60} + \frac{\operatorname{cosec}^2 60}{1+\cot^2 60} = \dots\dots\dots$

- (a) 2 (b) 1 (c) 0 (d) $\sqrt{3}$

Ans : B

(27) $\operatorname{cosec} \alpha = \sec 45$ તો $\alpha = \dots\dots\dots$

- (a) 60 (b) 30 (c) 45 (d) 90

Ans : C

Hint : $\operatorname{cosec} \alpha = \sec 45$ $\operatorname{cosec} \alpha = \operatorname{cosec} 45$
 $= \operatorname{cosec} (90 - 45)$ $\therefore \alpha = 45$

(28) $\frac{\tan(90-A) \cdot \cot A}{\operatorname{cosec}^2 A} - \cos^2 A = \dots\dots\dots$

- (a) 0 (b) 1 (c) -1 (d) $2 \cos^2 A$

Ans : A

(29) $\sin^2 36^\circ + \cos^2 \theta = 1$ હોય, તો $\theta = \dots\dots\dots$

- (a) 54° (b) 44° (c) 36° (d) 34°

Ans : C

(30) $\tan^2 \theta + 1 = 8$ હોય, તો $\sec \theta = \dots\dots\dots$

- (a) $2\sqrt{2}$ (b) 3 (c) 1 (d) 25

Ans : A

(31) જો A અને B કોટિકોણ હોય, તો $\sin A \cdot \sec B = \dots\dots\dots$

- (a)1 (b)0 (c)-1 (d)2

Ans : A

- (32) જો
- 5θ
- અને લઘુકોણ માપ હોય તથા
- $\cos \theta = \sin 5\theta$
- હોય તો
- $\theta = \dots\dots\dots$

- (a)30 (b)45 (c)15 (d)60

Ans : CHint : $\cos \theta = \sin 5\theta$

$$\cos \theta = \cos(90 - 5\theta)$$

$$\therefore \theta = 90 - 5\theta$$

$$\theta + 5\theta = 90$$

$$6\theta = 90$$

$$\theta = \frac{90}{6}$$

$$\boxed{\theta = 15}$$

- (33)
- $\tan \theta^\circ = \frac{1}{\sqrt{3}}$
- હોય, તો
- $\theta^\circ = \dots\dots\dots$

- (a)30° (b)45° (c)15° (d)60°

Ans : A

Hint : $\tan \theta = \frac{1}{\sqrt{3}}$

$$\therefore \tan \theta = \tan 30^\circ$$

$$\therefore \theta = \boxed{30^\circ}$$

- (34)
- $\sec^2 30 - \tan^2 \alpha = 1$
- તો
- $\cot \alpha = \dots\dots\dots$

- (a)
- $\sqrt{3}$
- (b)
- $\frac{1}{\sqrt{3}}$
- (c)1 (d)
- $\frac{2}{\sqrt{3}}$

Ans : A

Hint : $\sec^2 30 - \tan^2 \alpha = 1$

$$\sec^2 30 = 1 + \tan^2 \alpha$$

$$\sec^2 30 = \sec^2 \alpha \quad \text{હવે } \cot \alpha = \cot 30$$

$$30 = \alpha$$

$$\boxed{\therefore \cot \alpha = \sqrt{3}}$$

- (35)
- $m \sin \theta = a$
- અને
- $n \cos \theta = b$
- હોય તો
- $\frac{a^2}{m^2} + \frac{b^2}{n^2} = \dots\dots\dots$

- (a)-1 (b)0 (c)1 (d)2

Ans : CHint : $m \sin \theta = a$ તથા $n \cos \theta = b$

$$\sin \theta = \frac{a}{m} \quad \therefore \cos \theta = \frac{b}{n}$$

હવે, $\sin^2 + \cos^2 \theta$

$$\therefore \left(\frac{a}{m}\right)^2 + \left(\frac{b}{n}\right)^2 = 1$$

$$\therefore \frac{a^2}{m^2} + \frac{b^2}{n^2} = \boxed{1}$$

- (36)
- $\sin 33^\circ \times \sec 57^\circ = \dots\dots\dots$

- (a) -1 (b) 1 (c) 0 (d) 2

Ans : B

- (37) ΔABC માં $m\angle B = 90^\circ$, $AC + BC = 25$ અને $AB = 5$ તો $\tan A = \dots\dots\dots$

- (a) $\frac{12}{13}$ (b) $\frac{5}{13}$ (c) $\frac{12}{5}$ (d) $\frac{5}{12}$

Ans : C

- (38) $\cos A = \theta$ તો $\cot A = \dots\dots\dots$

- (a) $\frac{\theta}{1-\theta}$ (b) $\frac{\theta}{\sqrt{1-\theta^2}}$ (c) $\frac{\sqrt{1-\theta^2}}{\theta}$ (d) $\frac{1-\theta}{\theta}$

Ans : B

H int : $\sin^2 \theta + \cos^2 \theta = 1$ $\cot \theta = \frac{\cos \theta}{\sin \theta}$

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

$$\sin^2 \theta = 1 - \theta^2$$

$$\cot \theta = \frac{\theta}{\sqrt{1-\theta^2}}$$

$$\sin \theta = \sqrt{1-\theta^2}$$

- (39) $\cos^2 (90 - \theta) = \dots\dots\dots - \sin^2 (90 - \theta)$

- (a) 0 (b) 1 (c) 2 (d) એકપણ નહિં

Ans : B

- (40) $\frac{\operatorname{cosec} 38^\circ}{\sec 52^\circ} - \frac{\cos 60^\circ}{\sin 30^\circ} = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) 3

Ans : A

- (41) $\frac{\sec \theta^\circ}{\operatorname{cosec} (90 - \theta)^\circ} + \frac{\tan (90 - \theta)^\circ}{\cot \theta} = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) -1

Ans : C

H int : $\frac{\sec \theta}{\operatorname{cosec} (90 - \theta)} + \frac{\tan (90 - \theta)}{\cot \theta} = \frac{\sec \theta}{\sec \theta} + \frac{\cot \theta}{\cot \theta} = 1 + 1 = \boxed{2}$

- (42) $\cos 41^\circ \cdot \operatorname{cosec} 49^\circ + \tan 49^\circ \cdot \tan 41^\circ = \dots\dots\dots$

- (a) 1 (b) 2 (c) 0 (d) -1

Ans : B

- (43) જો $9 \tan \theta = 4 \cot \theta$ હોય તો $\sin \theta : \cos \theta = \dots\dots\dots$

- (a) 3 : 2 (b) 2 : 3 (c) 4 : 3 (d) 1 : 1

Ans : B

H int : $9 \tan \theta = 4 \cot \theta$ $\therefore \tan \theta = \frac{2}{3}$

$$\therefore \frac{\tan \theta}{\cot \theta} = \frac{4}{9} \quad \therefore \frac{\sin \theta}{\cos \theta} = \frac{2}{3}$$

$$\therefore \tan^2 \theta = \frac{4}{9} \quad \therefore \sin \theta : \cos \theta = 2 : 3$$

- (44) જો લઘુકોણ A અને B માટે $\tan A = 1$ અને $\sin B = \frac{1}{\sqrt{2}}$ તો $\cos (A + B) = \dots\dots\dots$

- (a) 0 (b) 1 (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{\sqrt{2}}$

Ans : A

(45) $\cos^2 \theta = \frac{1}{4}$ છેલ્લે તો $\sec \theta = \dots\dots\dots$

- (a) 2 (b) $\sqrt{2}$ (c) $\frac{2}{\sqrt{3}}$ (d) 1

Ans : A

Hint : $\cos^2 \theta = \frac{1}{4}$

$\therefore \cos \theta = \frac{1}{2}$

$\therefore \sec \theta = \boxed{2}$

($\because \sec \theta = \frac{1}{\cos \theta}$)

(46) જો $\sin 150^\circ = \cos 150^\circ$ છેલ્લે, તો $\theta = \dots\dots\dots$

- (a) 3 (b) 4 (c) 5 (d) 8

Ans : A

(47) $\sin 60^\circ + \cos 30^\circ = \dots\dots\dots$

- (a) $2\sqrt{3}$ (b) $3\sqrt{2}$ (c) $\sqrt{3}$ (d) 1

Ans : C

Hint : $\sin 60^\circ + \cos 30^\circ = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} = \frac{2\sqrt{3}}{2} = \sqrt{3}$

(48) $(1 - \cos \theta) (1 + \cos \theta) = \dots\dots\dots$

- (a) $\operatorname{cosec}^2 \theta$ (b) $\cos^2 \theta$ (c) $2 - \cos^2 \theta$ (d) $\frac{1}{\operatorname{cosec}^2 \theta}$

Ans : D

(49) $\sqrt{1 + \tan^2 \theta} = \dots\dots\dots$

- (a) $\sec \theta$ (b) $\sec^2 \theta$ (c) $\tan \theta$ (d) 1

Ans : A

(50) જો $\cot A = 2$ છેલ્લે, તો $\operatorname{cosec} A = \dots\dots\dots$

- (a) $5\sqrt{5}$ (b) $3\sqrt{5}$ (c) $\sqrt{5}$ (d) $2\sqrt{5}$

Ans : C

Hint : $\operatorname{cosec}^2 A = 1 + \cot^2 A = 1 + (2)^2 = 1 + 4$

$\therefore \operatorname{cosec}^2 A = 5$ $\therefore \operatorname{cosec} A = \boxed{\sqrt{5}}$

(51) ΔABC માં $m\angle A = 90^\circ$ જો $AB : BC = 1 : 2$ તો $\sin B = \dots\dots\dots$

- (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{2}{\sqrt{3}}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

Ans : A

(52) $\sec^2 \theta - \tan^2 75^\circ = 1$ છેલ્લે, તો $\theta = \dots\dots\dots$

- (a) 5° (b) 15° (c) 75° (d) 40°

Ans : C

Hint : $\sec^2 \theta - \tan^2 \theta = 1$

- (53) $(\sin \theta + \cos \theta)^2 + (\sin \theta - \cos \theta)^2 = \dots\dots\dots$
 (a) 2 (b) -2 (c) $4 \sin \theta \cdot \cos \theta$ (d) $-4 \sin \theta \cdot \cos \theta$

Ans : A

- (54) નીચેનામાંથી ત્રિકોણમિતીય નિત્યસમ છે.
 (a) $\tan \theta + \cot \theta = 0$ (b) $\tan \theta \cdot \cot \theta = 1$
 (c) $\sin \theta \tan \theta = \sin \theta$ (d) $\operatorname{cosec} \theta \cdot \sin \theta + 1 = 0$

Ans : B

- (55) $\frac{2 \tan 30}{1 + \tan^2 30} = \dots\dots\dots$
 (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$

Ans : D

- (56) $\cos^3 60 - 2 \sin^4 60 + \frac{3}{4} \tan^2 30 + 2 \cot 45 = \dots\dots\dots$
 (a) $\frac{4}{5}$ (b) $\frac{25}{16}$ (c) $\frac{7}{4}$ (d) $\frac{5}{4}$

Ans : D

- (57) $1 : \sin \theta = a : b$ અને $\cos \theta : \sin \theta = c : d$ તો $\frac{a^2}{b^2} - \frac{c^2}{d^2} = \dots\dots\dots$
 (a) -1 (b) 1 (c) 0 (d) 2

Ans : B

Hint : $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$

- (58) $\frac{1}{1 + \tan^2 \theta} = \dots\dots\dots$
 (a) $\cos^2 \theta$ (b) $\sin^2 \theta$ (c) $\tan^2 \theta$ (d) $\cot^2 \theta$

Ans : A

Hint : $\frac{1}{1 + \tan^2 \theta} = \frac{1}{\sec^2 \theta} = \cos^2 \theta$

- (59) $\frac{\sin \theta}{5} = \frac{\cos \theta}{4}$ તો $\operatorname{cosec} \theta = \dots\dots\dots$
 (a) $\frac{4}{\sqrt{41}}$ (b) $\frac{\sqrt{41}}{4}$ (c) $\frac{5}{\sqrt{41}}$ (d) $\frac{\sqrt{41}}{5}$

Ans : D

Hint : $\frac{\sin \theta}{5} = \frac{\cos \theta}{4}$ એકંદરે પ્રમાણ લેતાં $\frac{\sin \theta}{\cos \theta} = \frac{5}{4}$

$\therefore \sin \theta = 5k$ અને $\cos \theta = 4k$

હવે, $\sin^2 \theta + \cos^2 \theta = 1$

$$(5k)^2 + (4k)^2 = 1$$

$$25k^2 + 16k^2 = 1$$

$$41k^2 = 1$$

$$k^2 = \frac{1}{41}$$

$\therefore \sin \theta = 5k$

$$= 5 \frac{1}{\sqrt{41}}$$

$$\sin \theta = \frac{5}{\sqrt{41}}$$

$$\operatorname{cosec} \theta = \frac{\sqrt{41}}{5}$$

$$\boxed{k = \frac{1}{\sqrt{41}}} \quad (60) \quad \tan(90 - \theta) \cdot \cos(90 - \theta) = \dots\dots\dots$$

- (a) 0 (b) 1 (c) $\cos \theta$ (d) $\sin \theta$

Ans : C

(61) $\operatorname{cosec}^2 \theta - \cot^2 \theta = \dots\dots\dots$

- (a) 1 (b) -1 (c) 0 (d) એકપણ નહિ

Ans : A

(62) $\sin \theta \cdot \operatorname{cosec} \theta + \cot \theta \cdot \tan \theta - \sec \theta \cdot \cos \theta = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) 3

Ans : B

Hint : $\sin \theta \cdot \operatorname{cosec} \theta + \cot \theta \cdot \tan \theta - \sec \theta \cdot \cos \theta = 1 + 1 - 1 = 1$

(63) $\sin^2 30 + \cos^2 \theta = 1$ તો $\theta = \dots\dots\dots$

- (a) 30 (b) 60 (c) 45 (d) 90

Ans : A

(64) $(\operatorname{cosec} 50^\circ + \sec 40^\circ)(\operatorname{cosec} 50^\circ - \sec 40^\circ)$ નું મૂલ્ય = $\dots\dots\dots$

- (a) 0 (b) 1 (c) -1 (d) 2

Ans : A

(65) જો $\sin \alpha = \cos \beta$ હોય તો $\alpha + \beta = \dots\dots\dots$

- (a) 30 (b) 60 (c) 45 (d) 90

Ans : D

Hint : $\sin \alpha = \cos \beta \quad \therefore \alpha = 90 - \beta$

$$\sin \alpha = \sin(90 - \beta) \quad \boxed{\alpha + \beta = 90}$$

(66) $2 \sin 30^\circ + 2 \tan 45^\circ - 3 \cos 60^\circ + 2 \cos^2 30^\circ = \dots\dots\dots$

- (a) 2 (b) 1 (c) 3 (d) 0

Ans : C

Hint : $2 \sin 30^\circ + 2 \tan 45^\circ - 3 \cos 60^\circ + 2 \cos^2 30^\circ$

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

$$= 1 + 2 - \frac{3}{2} + 2 \left(\frac{3}{4} \right) = 3 - \frac{3}{2} + \frac{3}{2} = \boxed{3}$$

(67) જો $\tan 5\theta \cdot \tan 4\theta = 1$ હોય, તો $\theta = \dots\dots\dots$

- (a) 25° (b) 15° (c) 10° (d) 30°

Ans : C

(68) નીચેના પૈકી..... સત્ય નથી

- (a) $\cos^2 \theta + \sin^2 \theta = 1$ (b) $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$
(c) $\sec^2 \theta - \tan^2 \theta = 1$ (d) $\sec^2 \theta + \cot^2 \theta = 1$

Ans : C

(69) $\cot^2 \theta - \operatorname{cosec}^2 25 = -1$ હોય તો $\theta = \dots\dots\dots$

- (a) 65 (b) 55 (c) 45 (d) 25

Ans : D

H int : $\cot^2 \theta - \operatorname{cosec}^2 25 = -1$

$\cot^2 \theta + 1 = \operatorname{cosec}^2 25$

$\operatorname{cosec}^2 \theta = \operatorname{cosec}^2 25$

$\theta = 25$

(70) $5 \cos^2 \theta + 6 \sin^2 \theta = \frac{11}{2}$ and $\operatorname{cosec} \theta = \dots\dots\dots$

- (a) 0 (b) 1 (c) $\sqrt{2}$ (d) $\frac{2}{\sqrt{3}}$

Ans : C

H int : $5 \cos^2 \theta + 6 \sin^2 \theta = \frac{11}{2}$

$\sin^2 \theta = \frac{11}{2} - 5$

$5 \cos^2 \theta + 5 \sin^2 \theta + \sin^2 \theta = \frac{11}{2}$

$\sin^2 \theta = \frac{1}{2}$

$5(\cos^2 \theta + \sin^2 \theta) + \sin^2 \theta = \frac{11}{2}$

$\sin \theta = \frac{1}{\sqrt{2}}$

$5 + \sin^2 \theta = \frac{11}{2}$

$\operatorname{cosec} \theta = \sqrt{2}$

(71) $\sec 70 \cdot \sin 20 - \cos 20 \cdot \operatorname{cosec} 70 = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) -1

Ans : A

(72) $4 \sin \theta + 4 \cos^2 \theta - 5 = 0$ and $\cos \theta = \dots\dots\dots$

- (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$ (c) 2 (d) 1

Ans : A

H int : $\therefore 4 \sin \theta + 4 \cos^2 \theta - 5 = 0 \quad \therefore \sin \theta = \frac{1}{2}$

$\therefore 4 \sin \theta + 4(1 - \sin^2 \theta) - 5 = 0 \quad \therefore \sin \theta = \sin 30^\circ$

$\therefore 4 \sin \theta + 4 - 4 \sin^2 \theta - 5 = 0 \quad \therefore \theta = 30^\circ$

$\therefore 4 \sin^2 \theta - 4 \sin \theta + 1 = 0 \quad \therefore \theta = 30^\circ$

$\therefore (2 \sin \theta - 1)^2 = 0$

$\therefore 2 \sin \theta - 1 = 0$

$\therefore 2 \sin \theta = 1$

\hookrightarrow and, $\cos \theta = \cos 30^\circ = \frac{\sqrt{3}}{2}$

(73) $\cot^2 \theta - \operatorname{cosec}^2 \theta = \dots\dots\dots$

- (a) 1 (b) -1 (c) $\sec^2 \theta$ (d) $\operatorname{cosec}^2 \theta$

Ans : A

(74) $\operatorname{cosec}^2 50 = 1 + \cot^2 \theta$ and $\theta = \dots\dots\dots$

- (a) 40° (b) 50° (c) 30° (d) 60°

Ans : B

H int : $\operatorname{cosec}^2 50 = 1 + \cot^2 \theta \quad \therefore \operatorname{cosec}^2 50^\circ = \operatorname{cosec}^2 \theta$

$\therefore 50^\circ = \theta$

(75) $\sqrt{1 - \cos^2 \theta} = \dots\dots\dots$
 (a) $\sin \theta$ (b) $\sin^2 \theta$ (c) $\operatorname{cosec} \theta$ (d) $\sec \theta$

Ans : A

(76) ΔPQR માં $\angle Q$ કાટકોણ છે. $PQ = 7$ અને $PR = 25$ તો $\sin P = \dots\dots\dots$
 (a) $\frac{7}{25}$ (b) $\frac{25}{7}$ (c) $\frac{24}{25}$ (d) $\frac{7}{24}$

Ans : C

(77) $\sin \theta \cdot \cot \theta = \dots\dots\dots$
 (a) $\sin \theta$ (b) $\cos \theta$ (c) $\tan \theta$ (d) $\cot \theta$

Ans : B

Hint : $\sin \theta \cdot \cot \theta = \sin \theta \cdot \frac{\cos \theta}{\sin \theta} = \cos \theta$

(78) $\tan^2 \theta = \sin^2 \theta + \cos^2 \theta$, તો $\theta = \dots\dots\dots$
 (a) 45 (b) 60 (c) 90 (d) 30

Ans : A

(79) $\frac{\cos 70}{\sin 20} + \frac{\cos 55 \cdot \operatorname{cosec} 35}{\tan 5 \cdot \tan 25 \cdot \tan 45 \cdot \tan 65 \cdot \tan 85} = \dots\dots\dots$
 (a) 2 (b) 1 (c) 0 (d) -1

Ans : A

(80) $\frac{\operatorname{cosec} A}{\cot A + \tan A} = \dots\dots\dots$
 (a) $\sin A$ (b) $\operatorname{cosec} A$ (c) $\sec A$ (d) $\cos A$

Ans : D

(81) $\frac{\tan \theta \cdot \cot \theta}{\operatorname{cosec} \theta} = \dots\dots\dots$
 (a) $\cos \theta$ (b) $\operatorname{cosec} \theta$ (c) $\tan \theta$ (d) $\sin \theta$

Ans : D

(82) $\sin^2 70^\circ - \cos^2 20^\circ = \dots\dots\dots$
 (a) 1 (b) 0 (c) 2 (d) -1

Ans : B

(83) જો $\cos^2 50^\circ = 1 - \cos^2 2\theta$ હોય, તો $\theta = \dots\dots\dots$
 (a) 10° (b) 20° (c) 30° (d) 40°

Ans : B

Hint : $\cos^2 50^\circ = 1 - \cos^2 2\theta$

$\therefore \sin^2 (90^\circ - 50^\circ) = \sin^2 2\theta \quad \therefore 2\theta = 40^\circ$

$\therefore \sin^2 40^\circ = \sin^2 2\theta \quad \therefore \theta = \boxed{20^\circ}$

(84) $\sin 35^\circ - \cos \theta = 0$ હોય, તો $\theta = \dots\dots\dots$
 (a) 65° (b) 55° (c) 35° (d) 25°

Ans : B

Hint : $\sin 35^\circ - \cos \theta = 0 \quad \therefore 35 = 90^\circ - \theta$

$\therefore \sin 35^\circ = \cos \theta \quad \therefore \theta = 90^\circ - 35^\circ$

$\therefore \sin 35^\circ = \sin(90 - \theta) \quad \therefore \theta = \boxed{55^\circ}$

(85) $\operatorname{cosec} 3\alpha = \sec 60$ તો $\cos \frac{9\alpha}{2} = \dots\dots\dots$
 (a) 1 (b) -1 (c) -1 (d) અવ્યાખ્યાયિત

Ans : C

- (86) જો $\sin^2(4x + 38^\circ) + \cos^2(3x + 68^\circ) = 1$ હોય, તો $x = \dots\dots\dots$
 (a) 25 (b) 30 (c) 45 (d) 60

Ans : B

Hint : $\sin^2(4x + 38^\circ) + \cos^2(3x + 68^\circ) = 1$
 $\therefore \sin^2(4x + 38^\circ) = 1 - \cos^2(3x + 68^\circ)$
 $\therefore \sin^2(4x + 38^\circ) = \sin^2(3x + 68^\circ)$
 $\therefore 4x + 38^\circ = 3x + 68^\circ$
 $\therefore 4x - 3x = 68^\circ - 38^\circ$
 $\therefore \boxed{x = 30^\circ}$

- (87) $\cot \theta \cdot \sin \theta = \dots\dots\dots$
 (a) $\sin \theta$ (b) $\cos \theta$ (c) $\sec \theta$ (d) $\operatorname{cosec} \theta$

Ans : B

Hint : $\cot \theta \cdot \sin \theta = \frac{\cos \theta}{\sin \theta} \cdot \sin \theta = \cos \theta$

- (88) જો $\sin \theta \cdot \cos \theta = 0$ હોય તો $(\cos \theta - \sin \theta)^2 = \dots\dots\dots$
 (a) 0 (b) 1 (c) 2 (d) 3

Ans : B

- (89) ΔABC માં $m\angle C = 90^\circ$ હોય તો $\cos^2 A - \sec^2 B = \dots\dots\dots$
 (a) 0 (b) 1 (c) -1 (d) 2

Ans : C

- (90) $(3 \sin \theta + 5 \cos \theta)^2 + (3 \cos \theta - 5 \sin \theta)^2 = \dots\dots\dots$
 (a) 16 (b) -16 (c) 34 (d) 0 **Ans : C**

- (91) જો $\cos(A + B) = 0$ તથા $\sin A = \frac{1}{2}$ હોય તો $B = \dots\dots\dots$ થાય.
 (a) 45° (b) 60° (c) 30° (d) 15°

Ans : C

Hint : $\cos(A+B) = \frac{1}{2}$
 $\cos(A + B) = \cos 60^\circ$
 $A + B = 60^\circ \dots(1)$
 \hookrightarrow એ, $\sin A = \frac{1}{2}$
 $\therefore \sin A = \sin 30^\circ$
 $A = 30^\circ$ ની ઉપર (1) માં મૂકતાં
 $\therefore 30^\circ + B = 60^\circ$
 $\therefore B = 60^\circ - 30^\circ = \boxed{30^\circ}$

- (92) $\frac{\cos \theta \cdot \sec \theta}{\operatorname{cosec} \theta} = \dots\dots\dots$
 (a) $\cot \theta$ (b) $\tan \theta$ (c) $\sin \theta$ (d) $\cos \theta$

Ans : C

- (93) $3 \frac{\tan 20^\circ}{\cot 70^\circ} - 2 \frac{\sec 42^\circ}{\operatorname{cosec} 48^\circ} = \dots\dots\dots$

- (a)0 (b)1 (c)2 (d)3

Ans : B

- (94) જો
- $\alpha = 15^\circ$
- હોય તો
- $\sec^2 3\alpha = \dots\dots\dots$

- (a)
- $\frac{2}{3}$
- (b)
- $\sqrt{2}$
- (c) 2 (d)
- $\frac{1}{2}$

Ans : C

- (95)
- $\frac{\cos \alpha \cdot \sec \alpha}{\operatorname{cosec} \alpha} \dots\dots\dots$

- (a)
- $\cos \alpha$
- (b)
- $\sin \alpha$
- (c)
- $\sec \alpha$
- (d)
- $\operatorname{cosec} \alpha$

Ans : BHint : $\frac{\cot \alpha \cdot \sec \alpha}{\operatorname{cosec} \alpha} = \frac{1}{\operatorname{cosec} \alpha} = \sin \alpha$

- (96)
- ΔDEF
- માં
- \overline{DF}
- કર્ણ છે.
- $\therefore \cos F = \dots\dots\dots$

- (a)
- $\frac{EF}{DF}$
- (b)
- $\frac{DE}{DF}$
- (c)
- $\frac{DF}{DE}$
- (d)
- $\frac{DF}{EF}$

Ans : A

- (97)
- $\tan \theta = \sqrt{3}$
- હોય તો
- $\operatorname{cosec} \theta = \dots\dots\dots$

- (a) 2 (b)
- $\frac{1}{2}$
- (c)
- $\frac{\sqrt{3}}{2}$
- (d) 1

Ans : B

- (98)
- $\cot 12 \cdot \cot 38 \cdot \cot 52 \cdot \cot 60 \cdot \cot 78 = \dots\dots\dots$

- (a)
- $\sqrt{3}$
- (b)
- $\frac{1}{\sqrt{3}}$
- (c) 1 (d) 0

Ans : B

- (99) જો
- $\sec^2 \theta + \tan^2 \theta = \frac{7}{5}$
- હોય, તો
- $\sec^4 \theta - \tan^4 \theta = \dots\dots\dots$

- (a)
- $\frac{7}{5}$
- (b)
- $\frac{5}{7}$
- (c)
- $\frac{3}{2}$
- (d)
- $\frac{2}{3}$

Ans : AHint : $\sec^4 \theta - \tan^4 \theta = (\sec^2 \theta - \tan^2 \theta)(\sec^2 \theta + \tan^2 \theta)$

$$= (1)(\sec^2 \theta + \tan^2 \theta) = \left[\frac{7}{5} \right] (\because \sec^2 \theta + \tan^2 \theta = \frac{7}{5})$$

- (100) જો
- $\frac{1}{\operatorname{cosec}^2 \alpha} + \cos^2 \alpha = p$
- હોય, તો
- $p = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) 3

Ans : BHint : નિત્યસમ $\sin^2 \alpha + \cos^2 \alpha = 1$