

Trigo sheet - ④

~70Q's

Value Picking



Concept $\Rightarrow$

formula/Theorem/Identity

$$L.H.S = R.H.S$$

(always)

but, $\theta = \text{any angle}$

$$\theta = 30^\circ$$

$$\theta = 45^\circ$$

$$\theta = 60^\circ$$

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

$$\frac{4}{3} - \frac{1}{3} = 1$$

$$2 - 1 = 1$$

$$4 - 3 = 1$$

Value put करते समय $\frac{0}{0}, \frac{1}{0}, \infty$, कालेजिए फिजिज नही बन्नी
पाहिये



$$(1 + \tan \theta + \sec \theta) \cdot (1 + \cot \theta - \operatorname{cosec} \theta) = ?$$

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

put $\theta = 45^\circ$

a) 1

b) -1

c) 2 ✓

d) -2



1. If $10\sin A + \cos A = \sqrt{6}\sin A$, find the value of $\tan A$.

यदि $10\sin A + \cos A = \sqrt{6}\sin A$ है, तो $\tan A$ का मान ज्ञात कीजिए।

RRB NTPC GRADUATE LEVEL CBT-2 (2026)

~~[A] $\frac{-10 - \sqrt{6}}{96}$~~

[B] $\frac{-11 - \sqrt{6}}{96}$

✓ [C] $\frac{-10 - \sqrt{6}}{94}$

[D] $\frac{-10 - \sqrt{6}}{99}$

$$(10 - \sqrt{6})\sin A = -\cos A$$

$$10 - \sqrt{6}$$

$$\tan A = \frac{-1}{10 - \sqrt{6}} \times \frac{10 + \sqrt{6}}{10 + \sqrt{6}} = \frac{-10 - \sqrt{6}}{94}$$

2. Find the value of the following expression.

निम्नलिखित व्यंजक का मान ज्ञात कीजिए।

$$5(\sin^4\theta + \cos^4\theta) + 3(\sin^6\theta + \cos^6\theta) + 19\sin^2\theta\cos^2\theta$$

[A]

8

[B] 5

[C]

6

[D] 7

$$5+3 \\ =8$$

put $\theta = 0^\circ$

4. Find the value of $4(\sec^6 \theta - \tan^6 \theta) - 6(\sec^4 \theta + \tan^4 \theta) + 5 = ?$

$4(\sec^6 \theta - \tan^6 \theta) - 6(\sec^4 \theta + \tan^4 \theta) + 5$ का मान ज्ञात कीजिए?

[A] 2

[B] 3

[C] 4

[D] 1

put $\theta = 0^\circ$

$$4 - 6 + 5 = 3$$

5. Find the value of $(\sin^6 A + \cos^6 A + 3\sin^2 A \cos^2 A) - (\sin^4 A - \cos^4 A + 1) \operatorname{cosec}^2 A$?

$(\sin^6 A + \cos^6 A + 3\sin^2 A \cos^2 A) - (\sin^4 A - \cos^4 A + 1) \operatorname{cosec}^2 A$ का मान ज्ञात कीजिये?

(SSC CHSL MAINS 2024)

[A] -3

[B] 3

[C] -1

[D] 0

Let $A = 90^\circ$

$1 - 2 \times 1$

$= -1$

6. The value of $(1 + \sin^4 A - \cos^4 A) \operatorname{cosec}^2 A$ is:

$(1 + \sin^4 A - \cos^4 A) \operatorname{cosec}^2 A$ का मान क्या होगा?

(SSC CPO 2023)

[A] -1

[C] -2

[B] 1

[D] 2

$$(\sin^2)^2 - (\cos^2)^2 = 1 \times (\sin^2 - \cos^2)$$

$$= (1 + \sin^2 - \cos^2) \times \frac{1}{\sin^2}$$

$$= \cancel{\sin^2} \times \frac{1}{\cancel{\sin^2}} = 1$$

7. **Simplify:** $\left[\{\sin^8 \theta - \cos^8 \theta\} \frac{1}{\sin^4 \theta + \cos^4 \theta} \right] + 2\cos^2 \theta.$

निम्नलिखित को सरल कीजिए।

Simplify: $\left[\{\sin^8 \theta - \cancel{\cos^8 \theta}\} \frac{1}{\sin^4 \theta + \cancel{\cos^4 \theta}} \right] + \cancel{2\cos^2 \theta}$

[RRB technician grade-1 (2025)]

[A] 1

[B] 0

1x ✓

[C] 2

[D] -1

put $\theta = 90^\circ$

8. If $f(p) = \sin^{p+2}x + \cos^{p+2}x$, then find $6f(2) - 4f(4) + 10f(0)$?

यदि $f(p) = \sin^{p+2}x + \cos^{p+2}x$, तो $6f(2) - 4f(4) + 10f(0)$ ज्ञात कीजिए?

SSC CHSL PRE 2024

$$6 - 4 + 10 = 12$$

[A] 14

[B] 10

[C] 12

[D] 11

$$f(x) = \sin^4 x + \cos^4 x$$

$$\text{put } x = 0^\circ$$

$$f(0) = 1$$

9. The expression $3\operatorname{cosec}^2\theta \cot^2\theta + \cot^6\theta - \operatorname{cosec}^6\theta$ is equal to: –

व्यंजक $3\operatorname{cosec}^2\theta \cot^2\theta + \cot^6\theta - \operatorname{cosec}^6\theta$ बराबर है:-

[A] -2

[B] 1

[C] 2

[D] -1

$\cot\theta = 90^\circ$

$= -1$

10. The value of $4 + \tan^2\theta + \cot^2\theta - \sec^2\theta \operatorname{cosec}^2\theta$ is:

$4 + \tan^2\theta + \cot^2\theta - \sec^2\theta \operatorname{cosec}^2\theta$ का मान ज्ञात कीजिए। (RRB NTPC 12th LEVEL 2025)

A. 0

B. -2

C. 4

D. 2

$$\cancel{4} + \cancel{1} + \cancel{1} - \cancel{2} \times \cancel{2} = 2$$

but $\theta = 45^\circ$

11. Simplify: $\sec^2\phi \cot^2\phi - \frac{1}{\tan^2\phi} + 2\left(\frac{1}{\operatorname{cosec}^2\phi} + \frac{1}{\sec^2\phi}\right)$
निम्न को सरल कीजिए: **(RRB NTPC 12th LEVEL 2025)**

$$\sec^2\phi \cot^2\phi - \frac{1}{\tan^2\phi} + 2\left(\frac{1}{\operatorname{cosec}^2\phi} + \frac{1}{\sec^2\phi}\right)$$

A. 2

B. 3

C. 1

D. 0

$$\sec^2\phi \cdot \cot^2\phi - \cot^2\phi + 2$$

$$\cancel{\cot^2\phi \times \tan^2\phi} + 2$$

$$= 3$$

12. The expression $(\cos^6\theta + \sin^6\theta - 1)(\tan^2\theta + \cot^2\theta + 2) + 3$ is equal to:

व्यंजक $(\cos^6\theta + \sin^6\theta - 1)(\tan^2\theta + \cot^2\theta + 2) + 3$ का मान ज्ञात कीजिए? (SSC CGL MAINS 2021)

$$\left(\frac{1}{8} + \frac{1}{8} - 1\right) \times (1 + 1 + 2) + 3$$

[A]

0

[B] 1

[C]

2

[D] -1

$$\text{put } \theta = 45^\circ$$

$$\frac{-3}{4} \times 4 + 3 = 0$$

$$\left(\frac{1}{\sqrt{2}}\right)^6 = \frac{1}{8}$$

13. $(\operatorname{cosec} A - \sin A)^2 + (\sec A - \cos A)^2 - (\cot A - \tan A)^2$ is equal to:
 $(\operatorname{cosec} A - \sin A)^2 + (\sec A - \cos A)^2 - (\cot A - \tan A)^2$ बराबर है:

[A] 2 $\frac{1}{2} + \frac{1}{2} - 0$

[B] 1

[C] 0

[D] -1

put $A = 45^\circ$

$\sqrt{2} \leftarrow \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}$

14. Find the value of $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 - (\tan\theta + \cot\theta)^2$?

$(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 - (\tan\theta + \cot\theta)^2$ का मान ज्ञात कीजिये? RRB Group-D 2022

[A] $\frac{1}{2} + \sqrt{2}$ 4

[B] 7

[C] 9

[D] 5

$$\frac{9}{2} + \frac{9}{2} - 4 = 5$$

$$\theta = 45^\circ$$

15. The value of $\frac{\sec^6 \theta - \tan^6 \theta - 3\sec^2 \theta \tan^2 \theta + 1}{\cos^4 \theta - \sin^4 \theta + 2\sin^2 \theta + 2}$ is?

$\frac{\sec^6 \theta - \tan^6 \theta - 3\sec^2 \theta \tan^2 \theta + 1}{\cos^4 \theta - \sin^4 \theta + 2\sin^2 \theta + 2}$ का मान ज्ञात कीजिये ?

[A]

$\frac{3}{4}$

[B]

$\frac{2}{3}$

[C]

$\frac{1}{2}$

[D]

1

put $\theta = 0^\circ$

$= \frac{2}{3}$

16. $\frac{\cos^3 \theta + \sin^3 \theta}{\cos \theta + \sin \theta} + \frac{\cos^3 \theta - \sin^3 \theta}{\cos \theta - \sin \theta}$ is equal to?

$\frac{\cancel{\cos^3 \theta + \sin^3 \theta}}{\cancel{\cos \theta + \sin \theta}} + \frac{\cancel{\cos^3 \theta - \sin^3 \theta}}{\cancel{\cos \theta - \sin \theta}}$ किसके बराबर है?

[A] -1 [B] 2
[C] 0 [D] 1

put $\theta = 0^\circ$

$1+1$
 $=2$

17. $\sec\theta \left(\frac{1+\sin\theta}{\cos\theta} + \frac{\cos\theta}{1+\sin\theta} \right) - 2\tan^2\theta$ is equal to?

$\sec\theta \left(\frac{1+\sin\theta}{\cos\theta} + \frac{\cos\theta}{1+\sin\theta} \right) - 2\tan^2\theta$ किसके बराबर है? **SSC Selection Post (Phase-XII)**

[A]

4

[B] 1

[C]

2

[D] 0

put $\theta = 0^\circ$

$$1 \times (1+1) - 2$$

18. The value of $(2\cos^2\theta - 1) \left(\frac{1+\tan\theta}{1-\tan\theta} + \frac{1-\tan\theta}{1+\tan\theta} \right)$?

$(2\cos^2\theta - 1) \left(\frac{1+\tan\theta}{1-\tan\theta} + \frac{1-\tan\theta}{1+\tan\theta} \right)$ का मान क्या है?

[A]

2

[B] 4

[C]

3

[D] 1

$$\text{put } \theta = 0^\circ$$

$$= 1 \times (1+1) \\ = 2$$

19. $(\sec x \sec y + \tan x \tan y)^2 - (\sec x \tan y + \tan x \sec y)^2 = ?$

[A] -1

[B] 0

[C] $\sec^2 x$

[D] 1 ✓

let $y = 0^\circ$

$$\sec^2 x - \tan^2 x = 1$$

20. If $p = \sec\theta - \tan\theta$ and $q = \operatorname{cosec}\theta + \cot\theta$ then what is $p + q(p-1)$ equal to?

यदि $p = \sec\theta - \tan\theta$ और $q = \operatorname{cosec}\theta + \cot\theta$ है तो $p + q(p-1)$ क्या होगा?

[A]

-1 ✓

[B] 0

[C]

1

[D] 2

$$= p + p q - q$$

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

$$= -2 + 1$$

$$= -1$$

$$\text{put } \theta = 45^\circ$$

$$p = \sqrt{2} - 1$$

$$q = \sqrt{2} + 1$$

21. If $\tan^2 a = 3 + Q^2$, then $\sec a + \tan^3 a \operatorname{cosec} a = ?$

1+ $\tan^2 a = 1+3 + Q^2$ है, तो $\sec(a) + \tan^3 a \operatorname{cosec} a = ?$

(SSC CGL PRE 2022)

[A] $(3+Q^2)^{3/2}$

[B] $(7+Q^2)^{3/2}$

[C] $(5-Q^2)^{3/2}$

☒ [D] $(4+Q^2)^{3/2}$

$$\sec^2 a = 4 + Q^2$$

$$\sec a = (4 + Q^2)^{\frac{1}{2}}$$

$$\sec a + \tan^3 a \times \frac{\sin a}{\cos a} \times \sec a$$

$$= \sec a + \tan^2 a \cdot \sec a$$

$$= \sec a \times \sec^2 a$$

$$= \sec^3 a = (4 + Q^2)^{\frac{3}{2}}$$

21. If $\tan^2 \alpha = 3 + Q^2$, then $\sec \alpha + \tan^3 \alpha \operatorname{cosec} \alpha = ?$

$\tan^2 \alpha = 3 + Q^2$ है, तो $\sec(\alpha) + \tan^3 \alpha \operatorname{cosec} \alpha = ?$

(SSC CGL PRE 2022)

$$= 2 + 3\sqrt{3} \times \frac{2}{\sqrt{3}} = 8$$

[A] $(3+Q^2)^{3/2}$

[B] $(7+Q^2)^{3/2}$

[C] $(5-Q^2)^{3/2}$

[D] $(4+Q^2)^{3/2} = 4^{3/2} = (4^{1/2})^3 = 2^3 = 8$

(V.V.Vim) put $Q=0$

$$\tan^2 \alpha = 3$$

$$\Rightarrow \alpha = 60^\circ$$

22. Simplify: $\sec^2\beta - \frac{1}{\operatorname{cosec}^2\beta - 1}$ (RRB NTPC 12th LEVEL 2025)

निम्न को सरल कीजिए:

$$\sec^2\beta - \frac{1}{(\operatorname{cosec}^2\beta - 1)}$$

- A. 0
- B. $\operatorname{cosec}\beta$
- C. $\sec\beta$
- D. 1

$\sec^2\beta - \tan^2\beta$

23. Find the value of $\frac{1}{\sec^2 A} + \frac{1}{1 + \cot^2 A}$.

$$\frac{1}{\sec^2 A} + \frac{1}{1 + \cot^2 A}$$

का मान ज्ञात कीजिए। (RRB NTPC 12th LEVEL 2025)

A. 0

B. 1

C. $\tan^2 A$

D. $\frac{1}{2}$

$$= \cos^2 A + \sin^2 A$$

$$\frac{s^2 - c^2 + 1}{s^2} = s^2 \times s^2$$

What is the value of the given expression?

$$\frac{\sin^4 A - \cos^4 A + 1}{1 + \frac{1}{\tan^2 A}}$$

24.

दिए गए व्यंजक का मान ज्ञात कीजिए। **(RRB NTPC 12th LEVEL 2025)**

$$\frac{\sin^4 A - \cos^4 A + 1}{1 + \frac{1}{\tan^2 A}}$$

A. $2\sin^2 A + \tan^2 A$

B. $2\sin A \cdot \cos A$

C. $\frac{\sin A \cdot \cos A}{\tan^2 A}$

~~D. $2\sin^4 A$~~

~~$$(s^2 + c^2)(s^2 - c^2)$$~~

25.

What is the value of $(1 + \cot A + \tan A) (\sin A - \cos A) \frac{\sin A \cos A}{\sin^3 A - \cos^3 A}$.

$(1 + \overset{\frac{1}{\sec}}{\cot A + \tan A}) (\sin A - \cos A) \frac{\sin A \cos A}{\sin^3 A - \cos^3 A}$ का मान क्या है-
(SSC CHSL MAINS 2023)

[A]

2

[C]

1

[B] -1

[D] 0

$$\left(\frac{\sec + 1}{\sec} \right) \times (\sec - 1) \times \frac{\sec}{(\sec - 1) \cdot (1 + \sec)}$$

$$= 1$$

26. $\frac{1 - \sin A \cos A}{\cos A (\sec A - \operatorname{cosec} A)} \cdot \frac{\sin^2 A - \cos^2 A}{\sin^3 A + \cos^3 A} = ?$

[A]

$\sin A$

[B]

$\cos A$

[C]

$\tan A$

[D]

$\operatorname{cosec} A$

$$\frac{(1 - \cancel{\sin A})}{\cancel{\cos A} \cdot \frac{(\cancel{\sin A} - \cancel{\cos A})}{\cancel{\cos A}}} \times \frac{(\cancel{\sin A} - \cancel{\cos A})(\cancel{\sin A} + \cancel{\cos A})}{(\cancel{\sin A} + \cancel{\cos A}) \cdot (1 - \cancel{\sin A})}$$

$= \sin A$

$\left(\frac{\cancel{\cos A}}{\cancel{\cos A}} \right)$

27. If $p \sin A - \cos A = 1$, then $p^2 - (1+p^2) \cos A$ equals

यदि $p \sin A - \cos A = 1$, तो $p^2 - (1+p^2) \cos A$ का मान ज्ञात कीजिए।

[A] 0

[A] 2

[B] 1

[D] -1

$$\text{put } A = 90^\circ$$

$$p = 1$$