TRIGONOMETRY-02

VALUES OF TRIGONOMETRIC RATIOS
(0°, 30°, 45°, 60° & 90°)

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MATHS EXPERT

TRIGONOMETRY (Practice Sheet – 2)

Values of Trigonometric Ratios (0°, 30°, 45°, 60° & 90°)

1. If $3\sec^2 x - 4 = 0$, then the value of x ? $(0 < x < 90°)$ will be :
CHSL 12/10/2020 (Afternoon)
(a) 15° (b) 45°
(c) 30° (d) 60°

2. If $r\sin\theta = 1$, $r\cos\theta = \sqrt{3}$, then the value of $\left(\sqrt{3}\tan\theta + 1\right)$ is :
(a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$
(c) 1 (d) 2

3. $\frac{2\tan 30°}{1 - \tan^2 30°} = ?$
SSC CGL 7 June 2019 (Evening)
(a) 3 (b) $\frac{1}{3}$
(c) $\sqrt{3}$ (d) $\frac{1}{\sqrt{3}}$

4. If $x\sin 60°.\tan 30° = \sec 60°.\cot 45°$, then the value of x is :
(a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$
(c) 4 (d) $4\sqrt{3}$

5. If $x\sin 60°.\tan 30° - \tan^2 45° = \text{cosec } 60°.\cot 30° - \sec^2 45°$, then the value of x is :
(a) 2 (b) – 2
(c) 6 (d) – 4

6. The numerical value of
$\frac{\cos^2 45°}{\sin^2 60°} + \frac{\cos^2 60°}{\sin^2 45°} - \frac{\tan^2 30°}{\cot^2 45°} - \frac{\sin^2 30°}{\cot^2 30°}$.
(a) $1\frac{1}{4}$ (b) $\frac{3}{4}$
(c) $\frac{1}{4}$ (d) $\frac{1}{2}$

7. The value of $\sin^2 30°\cos^2 45° + 4\tan^2 30° + \frac{1}{2}\sin^2 90° + 2\cos 90°$ is :
SSC CGL 7 June 2019 (Evening)
(a) $\frac{15}{8}$ (b) $\frac{47}{24}$
(c) $\frac{23}{12}$ (d) 2

8. The value of
$\frac{4\tan^2 30° + \frac{1}{4}\sin^2 90° + \frac{1}{8}\cot^2 60° + \sin^2 30°.\cos^2 45°}{\sin 60°.\cos 30° - \cos 60°\sin 30°}$
is :
SSC CHSL 3 July 2019 (Evening)
(a) $1\frac{3}{4}$ (b) 4
(c) $2\frac{1}{2}$ (d) $3\frac{1}{2}$

9. $\frac{4}{3}\tan^2 60° + 3\cos^2 30° - 2\sec^2 30° - \frac{3}{4}\cot^2 60°$ is equal to :
SSC CPO 2018, 16 March 2019 (Evening)
(a) $\frac{8}{3}$ (b) $\frac{5}{4}$
(c) $\frac{10}{3}$ (d) $\frac{7}{3}$

10. The value of
$\frac{\tan 30°\,\text{cosec} 60° + \tan 60°\sec 30°}{\sin^2 30° + 4\cot^2 45° - \sec^2 60°}$ is :
SSC CGL 4 March 2020 (Morning)
(a) $\frac{2}{3}$ (b) $\frac{32}{3}$
(c) $\frac{8}{3}$ (d) $\frac{32}{99}$

11. The value of $\frac{\text{cosec}^2 30^\circ \sin^2 45^\circ + \sec^2 60^\circ}{\tan 60^\circ \text{cosec}^2 45^\circ - \sec^2 60^\circ \tan 45^\circ}$ is :

SSC CGL 2019 Tier-II (15/10/2020)

(a) $3\left(2+\sqrt{3}\right)$ (b) $2\left(\sqrt{3}-2\right)$

(c) $-2\sqrt{3}-2$ (d) $-3\left(2+\sqrt{3}\right)$

12. The value of $\frac{\sin^2 30^\circ + \cos^2 60^\circ + \sec 45^\circ \sin 45^\circ}{\sec 60^\circ + \text{cosec} 30^\circ}$ is :

CPO 24/11/2020 (Morning)

(a) $\frac{1}{4}$ (b) $-\frac{1}{4}$

(c) $-\frac{3}{8}$ (d) $\frac{3}{8}$

13. which among the following is an irrational quantity?

SSC CHSL 10 July 2019 (Afternoon)

(a) $\tan 30^\circ . \tan 60^\circ$ (b) $\sin 30^\circ$

(c) $\tan 45^\circ$ (d) $\cos 30^\circ$

14. If $\sin(\theta + 30^\circ) = \frac{3}{\sqrt{12}}$, then the value of x $(0 < x < 90^\circ)$ is :

SSC CHSL 26/10/2020 (Afternoon)

(a) 60° (b) 15°

(c) 45° (d) 30°

15. If $\sin\theta = \sqrt{3}\cos\theta$, $0^\circ < \theta < 90^\circ$, then the value of $2\sin^2\theta + \sec^2\theta + \sin\theta . \sec\theta + \text{cosec}\,\theta$ is :

SSC CGL 2019 Tier-II (11/09/2019)

(a) $\frac{33+10\sqrt{3}}{6}$

(b) $\frac{19+10\sqrt{3}}{6}$

(c) $\frac{33+10\sqrt{3}}{3}$

(d) $\frac{19+10\sqrt{3}}{3}$

16. If $3(\cot^2\varphi - \cos^2\varphi) = \cos^2\varphi$, $0^\circ < \varphi < 90^\circ$, then the value of $(\tan^2\varphi + \text{cosec}^2\varphi + \sin^2\varphi)$ is :

SSC CGL Tier-II (12/09/2019)

(a) $\frac{13}{3}$ (b) $\frac{61}{12}$

(c) $\frac{25}{12}$ (d) $\frac{15}{4}$

17. If $0^\circ < \theta < 90^\circ$ and $\cos^2\theta = 3(\cot^2\theta - \cos^2\theta)$, then the value of $\left(\frac{1}{2}\sec\theta + \sin\theta\right)^{-1}$ is :

SSC CGL 4 June 2019 (Afternoon)

(a) $\sqrt{3}+2$ (b) $2(2-\sqrt{3})$

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

18. If $\frac{\cos^2\theta}{\cot^2\theta - \cos^2\theta} = 3$, $0^\circ < \theta < 90^\circ$, then the value of $\cot\theta + \text{cosec}\,\theta$ is :

SSC CGL 6 June 2019 (Afternoon)

(a) $\sqrt{3}$ (b) $\frac{\sqrt{3}}{2}$

(c) $2\sqrt{3}$ (d) $\frac{3\sqrt{3}}{4}$

19. If $\sin(A - B) = \frac{1}{2}$ and $\cos(A + B) = \frac{1}{2}$, where $A > B > 0^\circ$, and $A + B$ is an acute angle, then the value of A is :

SSC CHSL 26/10/2020 (Afternoon)

(a) 45° (b) 30°

(c) 15° (d) 75°

20. If $\sin(A + B) = \frac{\sqrt{3}}{2}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, then $(2A + 3B)$ is equal to :

SSC CPO 2018, 13 March 2019 (Morning)

(a) 120° (b) 135°

(c) 130° (d) 125°

21. For α and β both being acute angles, it is given that $\sin(\alpha + \beta) = 1$, $\cos(\alpha - \beta) = \frac{1}{2}$. The values of α and β are :

SSC CHSL 10 July 2019 (Evening)

(a) $75^\circ, 15^\circ$

(b) $45^\circ, 15^\circ$

(c) $75^\circ, 45^\circ$

(d) $60^\circ, 30^\circ$

22. The value of $\frac{1}{\sqrt{2}}\sin\frac{\pi}{6}\cos\frac{\pi}{4} - \cot\frac{\pi}{3}\sec\frac{\pi}{6} + \frac{5\tan\frac{\pi}{4}}{12\sin\frac{\pi}{2}}$ is equal to :

(a) 0 (b) 1

(c) 2 (d) $\frac{3}{4}$

23. The value of $152(\sin 30° + 2\cos^2 45° + 3 \sin 30° + 4\cos^2 45° + \ldots\ldots\ldots + 17 \sin 30° + 18 \cos^2 45°)$ is :

(a) an integer but not a perfect square
(b) a rational number but not an integer
(c) a perfect square of an integer
(d) irrational

24. If $x \cos 60° + y \cos 0° = 3$ and $4x \sin 30° - y \cot 45° = 2$, then what is the value of x?

(a) – 1 **(b)** 0
(c) 1 **(d)** 2

25. Consider the following :

I. $\frac{\cot 30° + 1}{\cot 30° - 1} = 2(\cos 30° + 1)$

II. $2\sin 45° \cos 45° - \tan 45° \cot 45° = 0$

Which of the above identities is/are correct?

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Answer Key

1. (c)	**2.**(d)	**3.** (c)	**4.** (d)	**5.** (a)	**6.** (b)	**7.** (b)	**8.** (d)	**9.** (c)	**10.** (b)
11.(d)	**12.**(d)	**13.**(d)	**14.**(d)	**15.**(a)	**16.**(b)	**17.**(b)	**18.**(a)	**19.**(a)	**20.**(b)
21.(a)	**22.**(a)	**23.**(c)	**24.**(d)	**25.**(c)					

All The Best