

Trigonometry

- 1) If ΔABC is right angled at B, then which of the following is true?
 a) $\frac{AB}{AC} = \sin C$ b) $\frac{BC}{AB} = \tan C$ c) $\frac{AC}{AB} = \cos C$ d) $\frac{AB}{BC} = \sec C$
- 2) If $5 \tan \theta = 4$, then $\left(\frac{5 \sin \theta - 3 \cos \theta}{5 \sin \theta + 3 \cos \theta}\right) = ?$ a) $\frac{2}{5}$ b) $\frac{1}{7}$ c) $\frac{2}{7}$ d) $\frac{5}{7}$
- 3) If $(\tan \theta + \cot \theta) = 5$, then $(\tan^2 \theta + \cot^2 \theta) = ?$ a) 25 b) 27 c) 23 d) 24
- 4) $\frac{\sin 19^\circ}{\cos 71^\circ} + \frac{\cos 73^\circ}{\sin 17^\circ} = ?$ a) 0 b) $\frac{1}{2}$ c) 1 d) 2
- 5) If $x \sin^2 60^\circ + \frac{4}{3} \sin^2 45^\circ \tan^2 60^\circ = \frac{1}{2} \sec^2 60^\circ \tan^2 30^\circ$, then find $x = ?$
 a) $-2\frac{2}{9}$ b) $-4\frac{2}{9}$ c) $-8\frac{2}{9}$ d) $2\frac{2}{9}$
- 6) $\sqrt{\frac{1 - \cos \theta}{1 + \cos \theta}} = ?$ a) $(\operatorname{cosec} \theta - \cot \theta)$ b) 0 c) $(\sec \theta - \tan \theta)$ d) 1
- 7) $\frac{1}{1 + \tan^2 \theta} + \frac{1}{1 + \cot^2 \theta} = ?$ a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) 1 d) 2
- 8) $\left(\frac{1 + \sin \theta}{\cos \theta} + \frac{\cos \theta}{1 + \sin \theta}\right) = ?$ a) $\sec \theta$ b) $2 \sec \theta$ c) $\frac{1}{2} \cos \theta$ d) $2 \cos \theta$
- 9) $\frac{\sin A + \sin B}{\cos A - \cos B} + \frac{\cos A + \cos B}{\sin A - \sin B} = ?$ a) 0 b) 1 c) -1 d) $\tan A \tan B$
- 10) If $13 \sin \theta = 5$, then $\frac{(5 \sin \theta - 2 \cos \theta)}{\tan \theta} = ?$ a) $\frac{12}{65}$ b) $\frac{1}{6}$ c) $\frac{1}{13}$ d) $\frac{12}{13}$
- 11) If $p \sin \theta = q$ and θ is an acute angle then find $\sqrt{p^2 - q^2} \tan \theta = ?$ a) p b) q c) pq d) $\frac{p}{q}$
- 12) If $(A+B) = 90^\circ$, then $\sqrt{\frac{\tan A \tan B + \tan A \cot B}{\sin A \sec B} - \frac{\sin^2 B}{\cos^2 A}} = ?$
 a) $\cot A$ b) $\tan A$ c) $\sin A$ d) $\operatorname{cosec} A$
- 13) If $3 \sec A - 2 \cos B = \sqrt{3}$ and $\angle B = 30^\circ$, then find $\cos(A-B) = ?$ a) 0 b) 1 c) 2 d) 3
- 14) If $\tan(x+y) \tan(x-y) = 1$, then $\tan x = ?$ a) $\sqrt{3}$ b) 1 c) $\frac{1}{2}$ d) $\frac{1}{\sqrt{2}}$
- 15) If $4x = \sec \theta$ and $\frac{4}{x} = \tan \theta$ then $8\left(x^2 - \frac{1}{x^2}\right) = ?$ a) $\frac{1}{16}$ b) $\frac{1}{6}$ c) $\frac{1}{2}$ d) $\frac{1}{4}$
- 16) If $\sin(x+y) = \cos[3(x+y)]$, then $\tan[2(x+y)] = ?$ a) $\sqrt{3}$ b) 1 c) 0 d) $\frac{1}{\sqrt{3}}$
- 17) $\cot 10^\circ \cot 20^\circ \cot 60^\circ \cot 70^\circ \cot 80^\circ = ?$ a) 1 b) -1 c) $\sqrt{3}$ d) $\frac{1}{\sqrt{3}}$
- 18) $\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ + \dots + \sin^2 85^\circ + \sin^2 90^\circ = ?$ a) $7\frac{1}{2}$ b) $8\frac{1}{2}$ c) 9 d) $9\frac{1}{2}$
- 19) $\sec^2 \theta + \tan^2 \theta = \frac{9}{12}$, then $(\sec^4 \theta - \tan^4 \theta) = ?$ a) $\frac{7}{12}$ b) $\frac{1}{2}$ c) $\frac{5}{12}$ d) 1
- 20) $(\sec \theta - \cos \theta)(\operatorname{cosec} \theta - \sin \theta)(\tan \theta + \cot \theta) = ?$ a) 1 b) $\frac{3}{2}$ c) 2 d) 0
- 21) If $(\sec x + \csc x) = 3$, then $(\tan^2 x - \sin^2 x) = ?$ a) 5 b) 13 c) 9 d) 4
- 22) If $\tan \theta \tan 2\theta = 1$, then $(\sin^2 \theta + \tan^2 2\theta) = ?$ a) $\frac{3}{4}$ b) $\frac{10}{3}$ c) $3\frac{3}{4}$ d) 3
- 23) If $\sin A + \operatorname{cosec} A = 2$, then $\sin^3 A + \operatorname{cosec}^3 A = ?$ a) 2^7 b) 0 c) 1 d) 2
- 24) If $(3 \sin \theta + 5 \cos \theta) = 5$, then $(5 \sin \theta - 3 \cos \theta) = ?$ a) 0 b) 5 c) $\frac{1}{2}$ d) 1
- 25) If $\cos \theta + \cos^3 \theta = 1$, then $(\sin^2 \theta + \sin^4 \theta) = ?$ a) 1 b) $\frac{1}{2}$ c) 0 d) -1