

ACHIEVERS FOUNDATION

10TH CBSE

Introduction to Trigonometry

1. If $x = p \sec A$ and $y = q \tan A$, then
(a) $x^2 - y^2 = p^2 q^2$ (b) $x^2 q^2 - y^2 p^2 = pq$ (c) $x^2 q^2 - y^2 p^2 = 1$ (d) $x^2 q^2 - y^2 p^2 = p^2 q^2$
2. If $b \tan X = a$, the value of $(a \sin X - b \cos X)/(a \sin X + b \cos X)$ is
(a) $(a - b)/(a^2 + b^2)$ (b) $(a + b)/(a^2 + b^2)$ (c) $(a^2 + b^2)/(a^2 - b^2)$ (d) $(a^2 - b^2)/(a^2 + b^2)$
3. The value of $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$ is
(a) 0 (b) 1 (c) infinity (d) None of these
4. $(\cos^4 A - \sin^4 A)$ is equal to
(a) $1 - 2 \cos^2 A$ (b) $2 \sin^2 A - 1$ (c) $\sin^2 A - \cos^2 A$ (d) $2 \cos^2 A - 1$
5. If $\sec 5A = \operatorname{cosec}(A + 30^\circ)$, where $5A$ an acute angle, then the value of A is
(a) 15 (b) 5 (c) 20 (d) 10
6. If $x \sin^3 q + y \cos^3 q = \sin q \cos q$ and $x \sin q = y \cos q$, then $x^2 + y^2$ is equal to
(a) 0 (b) $1/2$ (c) 1 (d) $3/2$
7. If $\tan^2 A = \cot(A - 18^\circ)$, where $2A$ is an acute angle, then the value of A is
(a) 12° (b) 18° (c) 36° (d) 48°
8. If $\tan q + \sin q = m$ and $\tan q - \sin q = n$, then $m^2 - n^2$ is equal to
(a) $\sqrt{mn}$ (b) $\frac{\sqrt{m}}{\sqrt{n}}$ (c) $4 \sqrt{mn}$ (d) None of these
9. If $(\sec A + \tan A)(\sec B + \tan B)(\sec C + \tan C) = (\sec A - \tan A)(\sec B - \tan B)(\sec C - \tan C) = x$ then the value of x is
(a) ± 1 (b) 0 (c) ± 2 (d) 1
10. If $\sin q + \sin^2 q = 1$, then find the value of $\cos^{12} q + 3 \cos^{10} q + 3 \cos^8 q + \cos^6 q + 2 \cos^4 q + 2 \cos^2 q - 2$.
(a) 0 (b) 1 (c) $\cos q$ (d) $\sin q$

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11. If $0 < x < 90$ and $2 \sin x + 15 \cos^2 x = 7$, then find the value of $\tan x$.
- (a) $4/5$ (b) $3/5$ (c) $3/4$ (d) $4/3$
12. If $f(x) = \cos^2 x + \sec^2 x$, then $f(x)$
- (a) ≥ 1 (b) ≤ 1 (c) ≥ 2 (d) ≤ 2
13. If ABC is a right angled triangle, then find the relation between $\tan (A - B - C)/2$ and $-\tan (A + B - C)/2$
- (a) equal (b) unequal (c) sum of these equal to 1 (d) None of the above
14. If $\sin q + \sin^2 q + \sin^3 q = 1$, then $\cos^6 q - 4 \cos^4 q + 8 \cos^2 q$ is equal to
- a) 1 (b) 2 (c) 3 (d) None of the above
15. If $m = a \cos^3 q + 3a \cos q \sin^2 q$ and $n = a \sin^3 q + 3a \cos^2 q \sin q$, then $(m + n)^{2/3} + (m - n)^{2/3}$ is equal to
- a) $2a^{2/3}$ b) $a^{2/3}$ c) $2a^{3/2}$ d) $a^{3/2}$