Trig Class 11 NCERT

Topic tree of Trigonometry class 11 NCERT Maths

Trigonometry Class 11 NCERT Maths Topic Tree

1. **Trigonometric Functions**
    - Introduction to Trigonometric Functions
    - Signs of Trigonometric Functions
    - Domain and Range of Trigonometric Functions
    - Trigonometric Functions of Sum and Difference of Two Angles
2. **Trigonometric Equations**
    - General Solutions of Trigonometric Equations
    - Principal Solutions of Trigonometric Equations
3. **Inverse Trigonometric Functions**
    - Definition and Properties
    - Principal Value Branches
    - Graphs of Inverse Trigonometric Functions
4. **Properties of Triangles**
    - Sine Rule
    - Cosine Rule
    - Area of a Triangle
    - Projection Formulae
5. **Trigonometric Ratios and Identities**
    - Trigonometric Ratios of Standard Angles
    - Complementary Angles
    - Trigonometric Identities
6. **Graphs of Trigonometric Functions**
    - Graphs of Sine, Cosine, and Tangent Functions
    - Transformations of Graphs
7. **Solution of Triangles**
    - Solution of Right-Angled Triangles
    - Solution of General Triangles
8. **Heights and Distances**
    - Angle of Elevation
    - Angle of Depression
    - Simple Problems on Heights and Distances

Trigonometry formula complete set

Complete Set of Trigonometry Formulas

Trigonometric Ratios

1. $\sin\theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$
2. $\cos\theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}$
3. $\tan\theta = \frac{\text{Opposite}}{\text{Adjacent}} = \frac{\sin\theta}{\cos\theta}$
4. $\csc\theta = \frac{1}{\sin\theta}$
5. $\sec\theta = \frac{1}{\cos\theta}$
6. $\cot\theta = \frac{1}{\tan\theta} = \frac{\cos\theta}{\sin\theta}$

Trigonometric Identities

1. $\sin^2\theta + \cos^2\theta = 1$
2. $1 + \tan^2\theta = \sec^2\theta$
3. $1 + \cot^2\theta = \csc^2\theta$

Sum and Difference Formulas

1. $\sin(a \pm b) = \sin a\cos b \pm \cos a\sin b$
2. $\cos(a \pm b) = \cos a\cos b \mp \sin a\sin b$
3. $\tan(a \pm b) = \frac{\tan a \pm \tan b}{1 \mp \tan a\tan b}$

Double Angle Formulas

1. $\sin 2a = 2\sin a\cos a$
2. $\cos 2a = \cos^2 a - \sin^2 a = 2\cos^2 a - 1 = 1 - 2\sin^2 a$
3. $\tan 2a = \frac{2\tan a}{1-\tan^2 a}$

Half Angle Formulas

1. $\sin\frac{a}{2} = \pm\sqrt{\frac{1-\cos a}{2}}$
2. $\cos\frac{a}{2} = \pm\sqrt{\frac{1+\cos a}{2}}$
3. $\tan\frac{a}{2} = \pm\sqrt{\frac{1-\cos a}{1+\cos a}} = \frac{\sin a}{1+\cos a} = \frac{1-\cos a}{\sin a}$

Product to Sum Formulas

1. $\sin a\sin b = \frac{1}{2}[\cos(a-b) - \cos(a+b)]$

2. $\cos a \cos b = \frac{1}{2}[\cos(a+b) + \cos(a-b)]$
3. $\sin a \cos b = \frac{1}{2}[\sin(a+b) + \sin(a-b)]$

Sum to Product Formulas

1. $\sin a + \sin b = 2 \sin\left(\frac{a+b}{2}\right) \cos\left(\frac{a-b}{2}\right)$
2. $\sin a - \sin b = 2 \cos\left(\frac{a+b}{2}\right) \sin\left(\frac{a-b}{2}\right)$
3. $\cos a + \cos b = 2 \cos\left(\frac{a+b}{2}\right) \cos\left(\frac{a-b}{2}\right)$
4. $\cos a - \cos b = -2 \sin\left(\frac{a+b}{2}\right) \sin\left(\frac{a-b}{2}\right)$

Inverse Trigonometric Functions

1. $\sin^{-1} x + \cos^{-1} x = \frac{\pi}{2}$
2. $\tan^{-1} x + \cot^{-1} x = \frac{\pi}{2}$
3. $\sec^{-1} x + \csc^{-1} x = \frac{\pi}{2}$

Miscellaneous Formulas

1. $\sin(\pi - a) = \sin a$
2. $\cos(\pi - a) = -\cos a$
3. $\tan(\pi - a) = -\tan a$
4. $\sin(2\pi - a) = -\sin a$
5. $\cos(2\pi - a) = \cos a$
6. $\tan(2\pi - a) = -\tan a$