TRIGONOMETRIC IDENTITIES

The Choosing the Right Path After +2 Students

Mnemonics to Remember Trigonometric Identities

Remembering trigonometric identities can feel overwhelming, especially when there are so many formulas that look alike. The good news? You don't have to memorize each one individually. With a few clever mnemonics and patterns, you can recall them much more easily during exams.

1. The "One Formula Rule"

Instead of remembering two formulas separately, remember just this:**$\sin^2\theta + \cos^2\theta = 1$**

From this single identity, you can derive others.

Divide everything by **$\cos^2\theta$**:

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

Mnemonic: Tan comes before Sec.

Tan + 1 = Sec

Now divide everything by **$\sin^2\theta$**:

$1 + \cot^2\theta = \text{cosec}^2\theta$

Mnemonic: Cot comes before Cosec. Cot + 1 = Cosec

2. The Pair Rule

Function	Best friend
Sin	Cosec
Cos	Sec
Tan	Cot

Each pair is the reciprocal of the other.

Mnemonic:"Some Clever People Can Cook."

- **S**ome → **Sin**
- **C**lever → **Cos**
- **P**eople → **Tan**
- **C**an → **Cot**
- **C**ook → **Cosec & Sec** (reciprocal partners)

3. SOH-CAH-TOA

The classic mnemonic still saves marks.

SOH

- Sin = Opposite / Hypotenuse

CAH

- Cos = Adjacent / Hypotenuse

TOA

- Tan=Opposite/Adjacent

4. The Reciprocal Chain

Visualize the mas mirror pairs:

Sin↔Cosec

Cos↔Sec

Tan↔Cot

If one goes on top, the other comes below.

Example:

- sec = 1/cos
- cosec = 1/sin
- cot = 1/tan

5. Quotient Identity

Instead of memorizing two formulas: Remember only this: **Tan = Sin / Cos** Everything else follows. Need cot? Simply flip it.

Cot = Cos / Sin

6. Pythagoras Family

Think of a triangle.
Pythagoras says:

$Base^2+Perpendicular^2=Hypotenuse^2$ Translate

That into trig:

$\sin^2+\cos^2=1$ Then

Remember: **Tan and Secare** one family

$\tan^2 + 1 = \sec^2$

And **Cot and Cosecare** another family.

$1 + \cot^2 = \text{cosec}^2$

7. The"Starts with One" Trick

Notice the pattern:$\sin^2 + \cos^2 =$ **1**
1 $+ \cot^2 = \text{cosec}^2$
$\tan^2 +$ **1** $= \sec^2$
Wherever you see **1**, you're dealing with a Pythagorean identity.

8. ASTC Sign Rule

Remember which functions are positive in each quadrant.
Quadrant I → All
Quadrant II → Sin
Quadrant III→ Tan
Quadrant IV →Cos
Mnemonic:

"All Students Take Coffee."

- **A** → All
- **S** → Sin
- **T** → Tan
- **C** → Cos

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