

Identities \rightarrow pythagorean, Reciprocal ($\frac{1}{x}$)

$$\text{Quotient } \tan = \frac{\sin}{\cos}$$

Simplify by

- change to sin / cos
- factoring
- combine fractions

$$\frac{A \times C}{B \times D} = \frac{AD + CB}{BD}$$

- common denominator (+/-)
- multiply fractions \rightarrow

$$\text{- divide fractions } \left(\frac{\frac{A}{B}}{\frac{C}{D}} \right) = \frac{A}{B} \cdot \frac{D}{C}$$

- multiply by a conjugate
- denominator $| \pm u$ or $u \pm 1$
or $u \pm v$

Verifying ~~is~~

Work on one side only
most complicated side

Proving equality

- no "both sides" operations

- Simplify
- change ~~is~~ to sines / cosines
- combine fractions
- multiply by conjugate of denominator
- factoring
- Work both sides to meet in the middle
- graphing to disprove equality

Solving

- assume equality
- solving for x, θ, α, \dots

* What solutions are asked for?
on $[0, 2\pi)$, all solutions...?

$$+ 2\pi n$$

- Isolate the trig function
- Taking a square root (+/-)
- factoring / ZPP
- Extraneous solutions

Pythagorean ID (sometimes)
Squaring both sides \leftarrow always check

Factoring Rules

$$(A+B)^2$$

$$A^2 + 2AB + B^2$$

Binomial
Squared

$$(A+B)(A-B)$$

$$A^2 - B^2$$

Conjugates
difference of
squares

$$AB + B$$
$$B(A+1)$$

$$AB + AC$$
$$A(B+C)$$

* Don't divide trig. functions to eliminate!