

**Simplifying Trig Expressions**  
**Matching WS**

Name \_\_\_\_\_

Simplify each of the following expressions using substitution of basic trig identities.  
 Match each number with its simplified form. Place the letter of the simplified form above the question number **to discover something to look forward to ...**

Hint: the easiest/shortest are #3, 4, 6, 7, 8 and the toughest/longest are #1, 2, 5 ... work them in any order you want ☺

1 $\frac{1}{\cot \theta} + \frac{1}{\tan \theta}$	I $\cos \theta$
2 $\frac{\csc \theta}{\tan \theta + \cot \theta}$	T $\cos^4 \theta$
3 $\frac{\sin^2 \theta}{\sec^2 \theta - 1}$	H $\sec \theta$
4 $\cos^2 \theta - \sin^2 \theta \cos^2 \theta$	Y $1 + \sin \theta$
5 $\frac{\tan \theta}{\csc \theta} + \frac{\sin \theta}{\tan \theta}$	D $\sin \theta - 1$
6 $\frac{1 - \csc \theta}{\csc \theta}$	B $\sec \theta \csc \theta$
7 $\sin^2 \theta \cot^2 \theta + \sin^2 \theta$	A 1
8 $\frac{\cos^2 \theta}{1 - \sin \theta}$	R $\cos^2 \theta$

Answer:

\_\_\_\_\_

1                      2                      3                      4                      5                      6                      7                      8

## Simplifying Trig Expressions – Matching WS – Hints

1	step 1	reciprocal sub
	step 2	quotient sub
	step 3	get common denom
	step 4	add fractions
	step 5	Pythagorean sub
	step 6	reciprocal sub

2	step 1	change all to sine and cosine
	step 2	get common denom
	step 3	add fractions
	step 4	Pythagorean sub
	step 5	multiply by reciprocal
	step 6	simplify

3	step 1	Pythagorean sub
	step 2	quotient sub
	step 3	multiply by reciprocal
	step 4	simplify

4	step 1	factor out GCF
	step 2	Pythagorean sub
	step 3	properties of exponents

5	step 1	quotient & reciprocal subs
	step 2	multiply by reciprocal
	step 3	get common denom
	step 4	add fractions
	step 5	Pythagorean sub
	step 6	reciprocal sub

6	step 1	separate into two fractions
	step 2	reciprocal sub

7	step 1	factor out GCF
	step 2	Pythagorean sub
	step 3	reciprocal sub
	step 4	simplify

8	step 1	multiply top & bottom by "conjugate" of denom
	step 2	Pythagorean sub
	step 3	simplify