

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 ...

| | |
|---|-----------------------------|
| 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

Fuston's opinion is that the easiest/shortest are #3, 4, 6, 7, 8
 and the toughest/longest are #1, 2, 5 ... work them in any order you want ☺

Hints are on the back ... use in case of "emergency" ONLY!

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 |

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

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|----------|--------|----------------------------|
| 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 |

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| 6 | step 1 | separate into two fractions |
| | step 2 | reciprocal sub |

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

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|----------|--------|---|
| 8 | step 1 | multiply top & bottom by “conjugate” of denom |
| | step 2 | Pythagorean sub |
| | step 3 | simplify |