A 3-1

Name Key Date

WORKSHEET - THE BASIC 8 TRIG IDENTITIES

Simplify each expression to a single trig function or number.

1. $\sec\theta \sin\theta$

$\frac{1}{\cos\theta} \cdot \frac{\sin\theta}{1} = \tan\theta$

2. $\cos\theta \tan\theta$

$\frac{\cos\theta}{1} \cdot \frac{\sin\theta}{\cos\theta} = \sin\theta$

3. $\tan^2\theta - \sec^2\theta$

$\frac{\sin^2\theta}{\cos^2\theta} - \frac{1}{\cos^2\theta} = \frac{\sin^2\theta - 1}{\cos^2\theta}$

$= \frac{-\cos^2\theta}{\cos^2\theta}$

$= -1$

4. $1 - \cos^2\theta$

$\sin^2\theta$

5. $(1-\cos\theta)(1+\cos\theta)$

$1 - \cos^2\theta$

$\sin^2\theta$

6. $(\sec x - 1)(\sec x + 1)$

$\sec^2 x - 1$

$\tan^2 x$

7. $\frac{1}{\sin^2 A} - \frac{1}{\tan^2 A}$

$\csc^2 A - \cot^2 A$

1

8. $1 - \frac{\sin^2\theta}{\tan^2\theta}$

$1 - \frac{\sin^2\theta}{\frac{\sin^2\theta}{\cos^2\theta}}$

$1 - \left(\frac{\sin^2\theta}{1} \cdot \frac{\cos^2\theta}{\sin^2\theta}\right)$

$1 - \cos^2\theta$

$\sin^2\theta$

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9. $\frac{1}{\cos^2\theta} - \frac{1}{\cot^2\theta}$

$\sec^2\theta - \tan^2\theta$

1

10. $\cos\theta(\sec\theta - \cos\theta)$

$\cos\theta\sec\theta - \cos^2\theta$

$\frac{\cos\theta}{1} \cdot \frac{1}{\cos\theta}$

$1 - \cos^2\theta$

$\sin^2\theta$

11. $\cos^2 A(\sec^2 A - 1)$

$\cos^2 A\left(\frac{1}{\cos^2 A} - 1\right)$

$1 - \cos^2 A$

$\sin^2 A$

12. $(1 - \cos x)(1 + \sec x)(\cos x)$

$1 + \sec x - \cos x - \cos x \sec x$

$1 + \sec x - \cos x - 1$

$(\sec x - \cos x)(\cos x)$

$\sec x \cos x - \cos^2 x$

$1 - \cos^2 x$

$\sin^2 x$

13. $\frac{\sin x \cos x}{1 - \cos^2 x}$

$\frac{\sin x \cos x}{\sin^2 x}$

$\frac{\cos x}{\sin x}$

$\cot x$

14. $\frac{\tan^2\theta}{\sec\theta + 1} + 1$

$\frac{\sec^2\theta - 1}{\sec\theta + 1} + 1$

$\frac{(\sec\theta + 1)(\sec\theta - 1)}{\sec\theta + 1} + 1$

$\sec\theta - 1 + 1$

$\sec\theta$

Name Key Date

Trig Identities Puzzle

Directions: Simplify each trig expression. Show all work.
Find your answer at the bottom of the page. Write the letter associated with your answer in the box that contains the question number. You may use answers more than once.

1. $\csc\theta \tan\theta$ — $\frac{1}{\sin\theta} \cdot \frac{\sin\theta}{\cos\theta}$ — E — $\frac{1}{\cos\theta} = \sec\theta$

2. $\sin\theta + \cot\theta \cos\theta$ — $\sin\theta + \frac{\cos\theta \cdot \cos\theta}{\sin\theta}$ — N — $\frac{\sin^2\theta + \cos^2\theta}{\sin\theta} = \frac{1}{\sin\theta} = \csc\theta$

3. $\csc^2\theta - \cot^2\theta$ — 1 — S

4. $\sec^2\theta - \cos^2\theta \sec^2\theta$ — $\sec^2\theta - 1$ — $\tan^2\theta$ — H

5. $\sin^2\theta + \cos^2\theta + \tan^2\theta$ — $1 + \tan^2\theta$ — $\sec^2\theta$ — I

6. $\cos\theta (1 + \tan^2\theta)$ — $\cos\theta \cdot \sec^2\theta$ — E — $\cos\theta \cdot \frac{1}{\cos^2\theta} = \frac{1}{\cos\theta} = \sec\theta$

7. $\sin\theta \csc\theta - \cos^2\theta$ — $1 - \cos^2\theta$ — O — $\sin^2\theta$

8. $\sec\theta - \sin\theta \tan\theta$ — $\sec\theta - \sin\theta \cdot \frac{\sin\theta}{\cos\theta}$ — R — $\frac{1}{\cos\theta} - \frac{\sin^2\theta}{\cos\theta} = \frac{\cos^2\theta}{\cos\theta} = \cos\theta$

9. $(\csc\theta + 1)(\csc\theta - 1)$ — $\csc^2\theta - 1$ — $\cot^2\theta$ — T

10. $\frac{\sin\theta}{\cos\theta \tan\theta}$ — $\frac{\sin\theta}{\cos\theta \cdot \frac{\sin\theta}{\cos\theta}}$ — $= 1$ — S

11. $(\csc\theta + \cot\theta)(1 - \cos\theta)$ — $\csc\theta - \csc\theta\cos\theta + \cot\theta - \cot\theta\cos\theta$ — U — $\csc\theta - \frac{\cos\theta}{\sin\theta} + \cot\theta - \frac{\cos^2\theta}{\sin\theta}$ — $\frac{\sin^2\theta}{1 - \cos^2\theta}$ — $\frac{\sin^2\theta}{\sin\theta} = \sin\theta$

12. $(\tan^2\theta - \sec^2\theta)(\sin^2\theta + \cos^2\theta)$ — X — $(-1)(1) = -1$

E. $\sec\theta$	N. $\csc\theta$	S. 1	X. -1	R. $\cos\theta$
H. $\tan^2\theta$	O. $\sin^2\theta$	T. $\cot^2\theta$	U. $\sin\theta$	I. $\sec^2\theta$

On October 4, 2006 Akira Haraguchi broke his own record by reciting the number pi to 100,000 decimal places.
It took him over

S	I	X	T	E	E	N		H	O	U	R	S
3	5	12	9	1	6	2		4	7	11	8	10

to complete the task.