Trigonometric Identities

Trig Identities

Prove each identity:

1. $\sec x - \tan x \sin x = \dfrac{1}{\sec x}$

2. $\dfrac{1+\cos x}{\sin x} = \csc x + \cot x$

3. $\dfrac{\sec\theta \sin\theta}{\tan\theta + \cot\theta} = \sin^2\theta$

4. $\dfrac{\sec\theta}{\cos\theta} - \dfrac{\tan\theta}{\cot\theta} = 1$

5. $\cos^2 y - \sin^2 y = 1 - 2\sin^2 y$

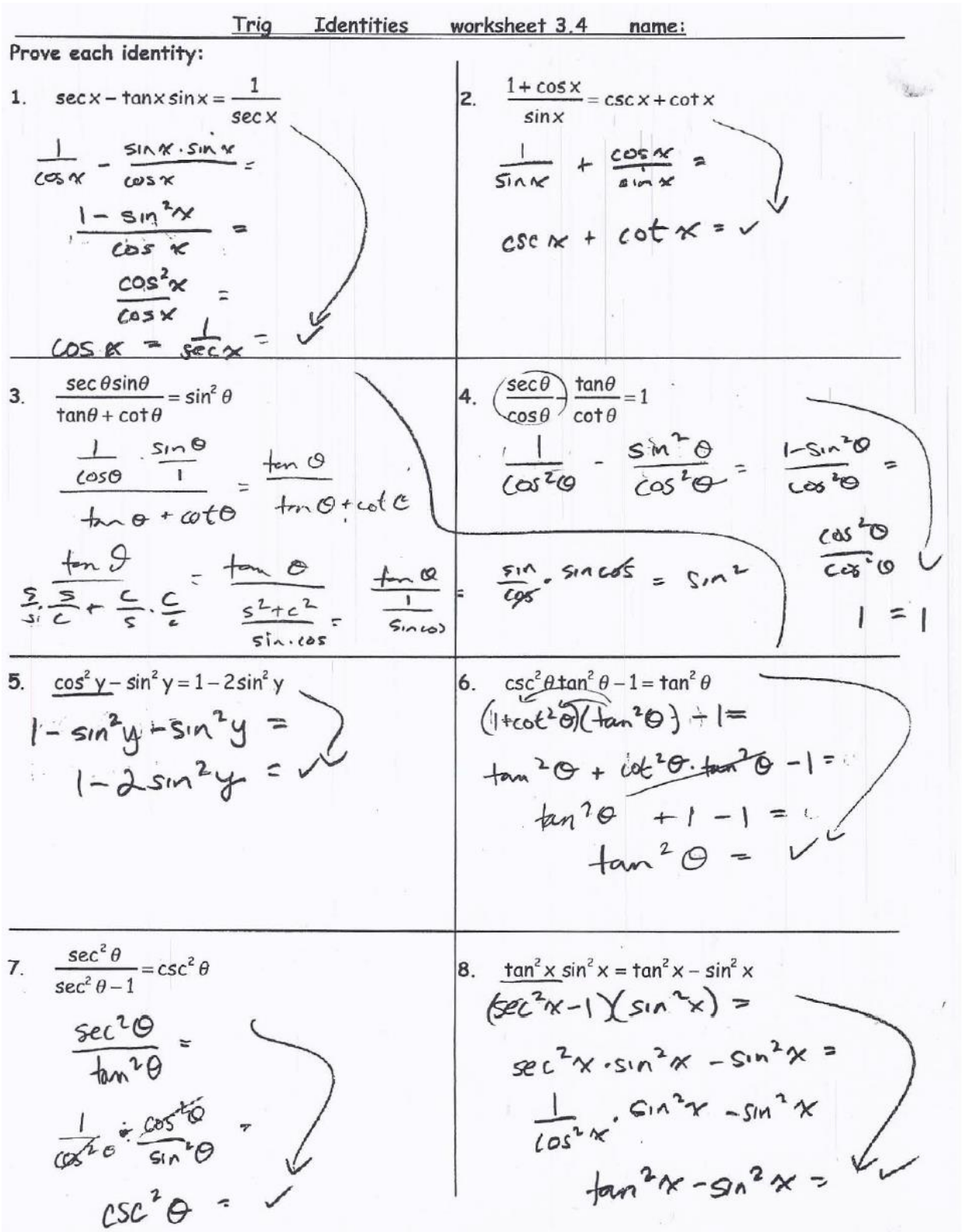
6. $\csc^2\theta \tan^2\theta - 1 = \tan^2\theta$

7. $\dfrac{\sec^2\theta}{\sec^2\theta - 1} = \csc^2\theta$

8. $\tan^2 x \sin^2 x = \tan^2 x - \sin^2 x$

Trigonometric Identities

Answers



Trig Identities worksheet 3.4 name:

Prove each identity:

1. $\sec x - \tan x \sin x = \frac{1}{\sec x}$

$\frac{1}{\cos x} - \frac{\sin x \cdot \sin x}{\cos x} =$

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

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

$\cos x = \frac{1}{\sec x} =$

2. $\frac{1+\cos x}{\sin x} = \csc x + \cot x$

$\frac{1}{\sin x} + \frac{\cos x}{\sin x} =$

$\csc x + \cot x = \checkmark$

3. $\frac{\sec\theta \sin\theta}{\tan\theta + \cot\theta} = \sin^2\theta$

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

$\frac{\frac{\sin\theta}{\cos\theta}}{\frac{\sin}{\cos}\cdot\frac{\cos}{\cos} + \frac{\cos}{\sin}\cdot\frac{\cos}{\cos}} = \frac{\tan\theta}{\frac{s^2+c^2}{\sin\cdot\cos}} = \frac{\tan\theta}{\frac{1}{\sin\cos}} =$

4. $\frac{\sec\theta}{\cos\theta} - \frac{\tan\theta}{\cot\theta} = 1$

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

$\frac{\sin}{\cos}\cdot\sin\cos = \sin^2$

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

$1 = 1$

5. $\cos^2 y - \sin^2 y = 1 - 2\sin^2 y$

$1 - \sin^2 y - \sin^2 y =$

$1 - 2\sin^2 y = \checkmark$

6. $\csc^2\theta \tan^2\theta - 1 = \tan^2\theta$

$(1+\cot^2\theta)(\tan^2\theta) - 1 =$

$\tan^2\theta + \cot^2\theta \cdot \tan^2\theta - 1 =$

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

$\tan^2\theta = \checkmark$

7. $\frac{\sec^2\theta}{\sec^2\theta - 1} = \csc^2\theta$

$\frac{\sec^2\theta}{\tan^2\theta} =$

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

$\csc^2\theta = \checkmark$

8. $\tan^2 x \sin^2 x = \tan^2 x - \sin^2 x$

$(\sec^2 x - 1)(\sin^2 x) =$

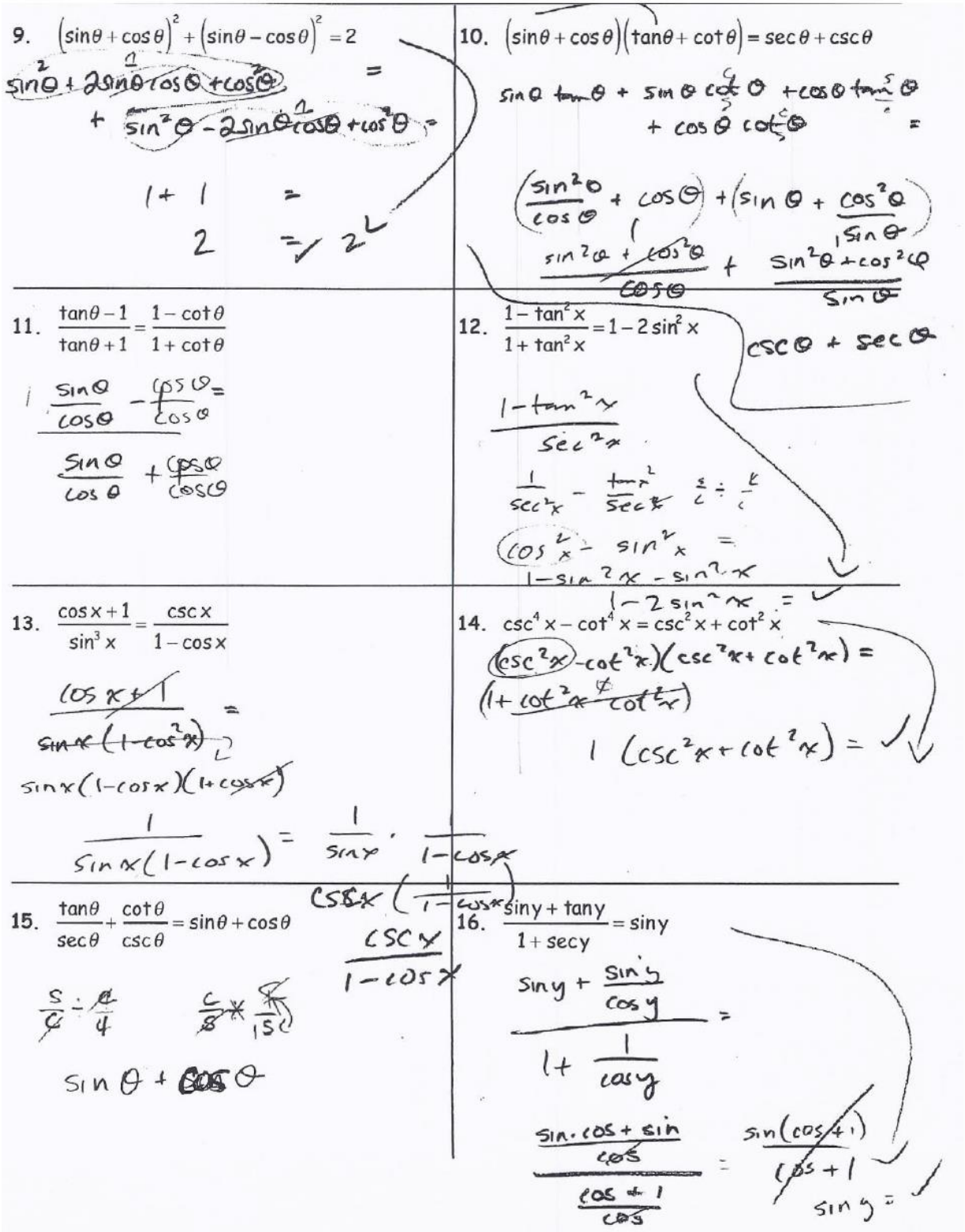
$\sec^2 x \cdot \sin^2 x - \sin^2 x =$

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

$\tan^2 x - \sin^2 x =$

Trigonometric Identities

Answers



Trigonometric Identities

Prove the following identity

1) $2\cos\theta\tan\theta\csc\theta = 2$

2) $6\cos\theta\left(\frac{1}{\cos\theta} - \frac{\cot\theta}{\csc\theta}\right) = 6\sin^2\theta$

3) $7\frac{\cot^2\theta}{\csc\theta}\sec^2\theta = 7\tan\theta\cos\theta\csc^2\theta$