Trig Identities worksheet 3.4 name:

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

9. $\left(\sin\theta+\cos\theta\right)^2+\left(\sin\theta-\cos\theta\right)^2=2$

10. $\left(\sin\theta+\cos\theta\right)\left(\tan\theta+\cot\theta\right)=\sec\theta+\csc\theta$

11. $\dfrac{\tan\theta-1}{\tan\theta+1}=\dfrac{1-\cot\theta}{1+\cot\theta}$

12. $\dfrac{1-\tan^2 x}{1+\tan^2 x}=1-2\sin^2 x$

13. $\dfrac{\cos x+1}{\sin^3 x}=\dfrac{\csc x}{1-\cos x}$

14. $\csc^4 x-\cot^4 x=\csc^2 x+\cot^2 x$

15. $\dfrac{\tan\theta}{\sec\theta}+\dfrac{\cot\theta}{\csc\theta}=\sin\theta+\cos\theta$

16. $\dfrac{\sin y+\tan y}{1+\sec y}=\sin y$