Prove the following identities.

A

1. $\sin\theta\cot\theta = \cos\theta$
2. $\cos A\tan A = \sin A$
3. $\dfrac{\sin^2\theta + \cos^2\theta}{\cos\theta} = \sec\theta$
4. $\dfrac{1+\sin\alpha}{\sin\alpha} = 1 + \csc\alpha$
5. $\dfrac{\sin\alpha - 1}{\cos\alpha} = \tan\alpha - \sec\alpha$
6. $1 - \sin B\cos B\tan B = \cos^2 B$
7. $\sin\alpha + \cos\alpha\cot\alpha = \csc\alpha$
8. $1 - 2\sin^2 x = 2\cos^2 x - 1$
9. $\cos\alpha(\csc\alpha - \sec\alpha) = \cot\alpha - 1$
10. $\csc\beta(\csc\beta + \cot\beta) = \dfrac{1}{1-\cos\beta}$
11. $\sin^4\alpha - \cos^4\alpha = 2\sin^2\alpha - 1$
12. $\tan^4\rho - \sec^4\rho = 1 - 2\sec^2\rho$
13. $\dfrac{\sin\beta + \tan\beta}{1+\cos\beta} = \tan\beta$
14. $\sec\delta + \tan\delta = \dfrac{\cos\delta}{1-\sin\delta}$

15. $(1+\csc\alpha)(1-\sin\alpha) = \cot\alpha\cos\alpha$
16. $(1 + \tan\theta + \sec\theta)^2 = 2(1+\sec\theta)(\tan\theta + \sec\theta)$
17. $(1+\sec\beta)(\sec\beta - 1) = \dfrac{\sin\beta\sec\beta}{\cos\beta\csc\beta}$
18. $(\csc\beta - 1)(1+\csc\beta) = \dfrac{\csc\beta\cos\beta}{\sec\beta\sin\beta}$
19. $\dfrac{\sin\delta\cos\delta}{1+\cos\delta} - \dfrac{\sin\delta}{1-\cos\delta} = -(\cot\delta\cos\delta + \csc\delta)$
20. $\dfrac{\sin\delta + \cos\delta}{\sec\delta + \tan\delta} + \dfrac{\cos\delta - \sin\delta}{\sec\delta - \tan\delta} = 2 - 2\sin^2\delta\sec\delta$
21. $\dfrac{\sec n}{1-\cos n} = \dfrac{\sec n + 1}{\sin^2 n}$
22. $\dfrac{\tan n}{\tan n + \sin n} = \dfrac{1-\cos n}{\sin^2 n}$
23. $\dfrac{1+\sec\gamma}{\sec\gamma - 1} + \dfrac{1+\cos\gamma}{\cos\gamma - 1} = 0$
24. $\dfrac{\sec^2\gamma(1+\csc\gamma) - \tan\gamma(\sec\gamma + \tan\gamma)}{\csc\gamma(1+\sin\gamma)} - 1 = 0$