Verifying Identities WS   Name_____

Verify each identity, showing clear steps.

1. $\cos^2 A \csc A \sec A = \cot A$

2. $\tan \beta (\sin \beta + \cot \beta \cos \beta) = \sec \beta$

3. $\cos x (\sec x + \cos x \, csc^2 x) = \csc^2 x$

4. $(\cos x - \sin x)^2 = 1 - 2\sin x \cos x$

5. $(\tan \beta + \cot \beta)^2 = \sec^2 \beta + \csc^2 \beta$

6. $\dfrac{1 + \cot^2 x}{\sec^2 x} = \cot^2 x$

7. $\dfrac{\sec A}{\sin A} - \dfrac{\sin A}{\cos A} = \cot A$

8. $\dfrac{1}{1 - \cos y} + \dfrac{1}{1 + \cos y} = 2\csc^2 y$

9. $\cot^2 x \csc^2 x - \cot^2 x = \cot^4 x$

10. $\sec^4 a - \tan^4 a = 1 + 2\tan^2 a$

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

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

13. $\dfrac{\cos x}{\sec x - 1} - \dfrac{\cos x}{\tan^2 x} = \cot^2 x$

14. $\dfrac{\sec x}{\sec x - \tan x} = \sec^2 x + \sec x \tan x$

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

16. $\sin^3 y \cos^2 y = \sin^3 y - \sin^5 y$

17. $\sec^2 \theta + \csc^2 \theta = \sec^2 \theta \csc^2 \theta$

18. $\sec \theta + \tan \theta = \dfrac{1}{\sec \theta - \tan \theta}$

19. $\dfrac{1 - 3\cos x - 4\cos^2 x}{\sin^2 x} = \dfrac{1 - 4\cos x}{1 - \cos x}$

20. $\dfrac{\sec^2 x - 6\tan x + 7}{\sec^2 x - 5} = \dfrac{\tan x - 4}{\tan x + 2}$

21. $\dfrac{\sec^3 x - \cos^3 x}{\sec x - \cos x} = \sec^2 x + 1 + \cos^2 x$

22. $(2\sin x + 3\cos x)^2 + (3\sin x - 2\cos x)^2 = 13$

23. $\dfrac{1 + \sin x + \cos x}{1 + \sin x - \cos x} = \dfrac{1 + \cos x}{\sin x}$

24. $\dfrac{1 + \sin x + \cos x}{1 - \sin x + \cos x} = \dfrac{1 + \sin x}{\cos x}$