Verifying Identities WS Name_____

Verify each identity, showing clear steps.

1. $\cos^2 A \csc A \sec A = \cot A$
2. $\tan\beta\left(\sin\beta + \cot\beta\cos\beta\right) = \sec\beta$
3. $\cos x\left(\sec x + \cos x\, csc^2 x\right) = \csc^2 x$
4. $\left(\cos x - \sin x\right)^2 = 1 - 2\sin x\cos x$
5. $\left(\tan\beta + \cot\beta\right)^2 = \sec^2\beta + \csc^2\beta$
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. $\left(2\sin x + 3\cos x\right)^2 + \left(3\sin x - 2\cos x\right)^2 = 13$
23. $\dfrac{1+\sin x+\cos x}{1+\sin x-\cos x} = \dfrac{1+\cos x}{\sin x}$
24. $\dfrac{1+\sin x+\cos x}{1-\sin x+\cos x} = \dfrac{1+\sin x}{\cos x}$