9.2 Proving Trig Identities **Name:_____**

Prove each identity. You may start on either side, but once you start you must work only on one side! Use a separate sheet of paper.

1. $\sec x(\sec x - \cos x) = \tan^2 x$

2. $\tan x(\cot x + \tan x) = \sec^2 x$

3. $\sin x(\csc x - \sin x) = \cos^2 x$

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

5. $\csc^2 x - \cos^2 x \csc^2 x = 1$

6. $\cos^2 x + \tan^2 x \cos^2 x = 1$

7. $(\sec x + 1)(\sec x - 1) = \tan^2 x$

8. $(1 + \sin x)(1 - \sin x) = \cos^2 x$

9. $\sec^2 x + \tan^2 x \sec^2 x = \sec^4 x$

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

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

12. $\sec^4 x - \tan^4 x = 1 + 2\tan^2 x$

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

14. $\dfrac{\sec x}{\sin x} - \dfrac{\sin x}{\cos x} = \cot x$

15. $\dfrac{\sin x}{\csc x} + \dfrac{\cos x}{\sec x} = 1$

16. $\dfrac{1}{\sec^2 x} + \dfrac{1}{\csc^2 x} = 1$

17. $\dfrac{1}{1 + \cos x} = \csc^2 x - \csc x \cot x$

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

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

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

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

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

23. $\sin^3 x \cos^2 x = \sin^3 x - \sin^5 x$

24. $\sin^3 x \cos^2 x = \cos^2 x \sin x - \cos^4 x \sin x$

25. $\sec^2 x + \csc^2 x = \sec^2 x \csc^2 x$

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

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

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

Wednesday – Odds
Thursday - Evens