Pre Calculus **Trig I-2** **Name** _____

Simplify each of the following on a separate sheet of paper.

1. $\sin\theta\cot\theta+\cos\theta\tan\theta$
2. $\tan\theta\cot\theta-\cos^2\theta\tan^2\theta$
3. $\sin x\cos x\left(\tan x+\cot x\right)$
4. $\sin\alpha\csc\alpha+\cos\alpha\csc\alpha\cot\alpha$
5. $\sin^2\theta+\sin^2\theta\tan^2\theta$
6. $\cot x\csc^2 x-\cot x$
7. $\sec x-\sin x\tan x$
8. $\cot\alpha\left(\tan\alpha-\cot\alpha\sin^2\alpha\right)$
9. $\sin\theta\sec\theta\cot\theta+\cos\theta\csc\theta\tan\theta$
10. $\left(1-\sin^2\theta\right)\left(1+\tan^2\theta\right)+\sin^2\theta\sec^2\theta$
11. $\cot^2\alpha\left(1+\tan^2\alpha\right)-\sin^2\alpha\left(1+\cot^2\alpha\right)$
12. $\sin^2 x\left(\csc^2 x-1\right)+\cos^2 x\left(\sec^2 x-1\right)$
13. $\dfrac{\tan\theta+\sec\theta}{1+\sin\theta}$
14. $\dfrac{\tan\alpha+\cot\alpha}{\sec\alpha\csc\alpha}$
15. $\dfrac{\sin A+\tan A}{\cot A+\csc A}$
16. $\dfrac{\sin x-\cos x}{\tan x\csc x-\sec x\cot x}$
17. $\dfrac{\sin x}{\cos x\tan x}+\dfrac{\cos x}{\sin x\tan x}$
18. $\dfrac{\sec^2\beta-1}{\tan\beta}\cdot\dfrac{\cot\beta}{\csc^2\beta-1}$
19. $\dfrac{1}{1+\tan^2\theta}+\dfrac{1}{1+\cot^2\theta}$
20. $\dfrac{1+\tan^2 x}{1+\cot^2 x}+\dfrac{1-\cos^2 x}{1-\sin^2 x}$
21. $\dfrac{1}{1+\cos A}+\dfrac{1}{1-\cos A}$
22. $\dfrac{\tan x}{1+\sec x}+\dfrac{\csc x}{\sec x}$
23. $\dfrac{\tan\alpha-\cot\alpha}{\sec\alpha-\csc\alpha}$
24. $\dfrac{1}{\csc^2 x+\csc x\cot x}$
25. $\left(\sin\theta+\cos\theta\right)^2+\left(\sin\theta-\cos\theta\right)^2$
26. $\left(1+\cot\theta\right)^2+\left(1-\cot\theta\right)^2$
27. $\tan^2\alpha\sec^2\alpha-\sec^2\alpha+1$
28. $\dfrac{\sin x}{\csc x-\cot x}+\dfrac{\sin x}{\csc x+\cot x}$
29. $\dfrac{\sin x}{1-\cos x}-\dfrac{1-\cos x}{\sin x}$
30. $\dfrac{\sin^4 x-\cos^4 x}{\tan x-\cot x}$
31. $\dfrac{\tan^2\beta}{\sec\beta-1}-\dfrac{\cot^2\beta}{\csc\beta-1}$
32. $\dfrac{\left(1-\cos x\right)\cos x-\sin^2 x}{1-2\cos x+\cos^2 x}$
33. $\tan^2 A\sec A+\dfrac{\sec A\tan A+\sec^2 A}{\sec A+\tan A}$
34. $\cot x\sec^2 x-\dfrac{1}{2}\left(\dfrac{\tan x}{\sec x-1}-\dfrac{\tan x}{\sec x+1}\right)$