Name: _____

Verifying Trigonometric Identities

1) Prove:

tan θ+2 cot θ =

1) $\dfrac{\sin^2\theta+2\cos^2\theta}{\sin\theta\cos\theta}$

2) tan x + cot x = $\dfrac{\csc x}{\cos x}$

3) $\dfrac{1+\sin x}{1-\sin x}-\dfrac{1-\sin x}{1+\sin x}=4\tan x\sec x$

4) $\dfrac{\cos x-1}{\cos x+1}=\dfrac{1-\sec x}{1+\sec x}$

5) $\dfrac{1+\cos x}{1-\cos x}=(\csc x+\cot x)^2$

6) $\dfrac{\csc x-1}{\csc x+1}=\dfrac{1-\sin x}{1+\sin x}$

7) $\dfrac{\cos^4 t-\sin^4 t}{\sin^2 t}=\cot^2 t-1$

8) $\dfrac{\tan^4 x-1}{\sec^4 x}=1-2\cos^2 x$

2) Verify the following identities:

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

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

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

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

5) $\dfrac{1-\sin x}{\cos x}=\dfrac{\cos x}{1+\sin x}$

6) $\tan^2 x(1+\cot^2 x)=\sec^2 x$

7) $\cos^4 x=\sin^2 x(\cot x-\cos x)(\cot x+\cos x)$

8) $\cos^4 x+\sin^4 x=(1-\sqrt{2}\sin x\cos x)(1+\sqrt{2}\sin x\cos x)$

9) $\sin^6 x+\cos^6 x+3\sin^2 x\cos^2 x=1$

10) $\sin^4 x+\cos^4 x=1-2\sin^2 x\cos^2 x$

11) $\sin^2 x-\sin^2 y=\frac{1}{\sec^2 y}-\frac{1}{\sec^2 x}$

12) $1-2\sin^2 x=\frac{1-\tan^2 x}{1+\tan^2 x}$

13) $\sin^4 x-\cos^4 x=(\sin x-\cos x)(\sin x+\cos x)$

14) $\tan^2 x+\cot^2 x+2=(\tan x+\cot x)^2$

15) $1+\tan^2 x+\tan^4 x=1+\frac{\sin^2 x}{\cos^4 x}$

16) $\frac{1+2\sin x\cos x}{\sin x+\cos x}=\sin x+\cos x$

3) Verify that : $\csc\beta\ (\cos\beta+\sin\beta)=\ \cot\beta\ +1$

4) If 3cotA=4 and A is an acute angle, check whether $\frac{1-\tan^2 A}{1+\tan^2 A}=\cos^2 A-\sin^2 A$ or not

5) Verify:

1) $\tan 48^0\tan 23^0\tan 42^0\tan 67^0=1$

2) $\cos 38^0\cos 52^0-\sin 38^0\sin 52^0=0$

6) Prove that sec A (1 – sin A)(sec A + tan A) = 1.