MHF4U

4.3 and 4.4 Trig Identities

PROVE IT!!!!

1. $\sin(a+b)+\sin(a-b)=2\sin a\cos b$

2. $\sin x\tan x=\sec - \cos x$

3. $\sin(p+q)\sin(p-q)=\sin^2 p-\sin^2 q$

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

5. $\dfrac{\cos(x-y)}{\cos x\sin y}=\tan x+\cot y$

6. $\cos^2 x\cos^2 y+\sin^2 x\sin^2 y+$
$\sin^2 x\cos^2 y+\sin^2 y\cos^2 x=1$

7. $2\cos x\cos y=\cos(x+y)+\cos(x-y)$

8. $\sec^2 x-\sec^2 y=\tan^2 x-\tan^2 y$

9. $\cot\left(\dfrac{5\pi}{4}+x\right)=-\dfrac{\tan x-1}{\tan x+1}$

10. $\dfrac{\tan x+\tan y}{\cot x+\cot y}=\tan x\tan y$

11. $\sec^6 x-\tan^6 x=1+3\tan^2 x\sec^2 x$

12. $(\sec x-\cos x)(\csc x-\sin x)=\dfrac{\tan x}{t+\tan^2 x}$

13. $\dfrac{\cos(x-y)-\cos(x+y)}{\cos(x-y)+\cos(x+y)}=\tan x\tan y$

14. $\cos^6 x+\sin^6 x=1-3\sin^2 x+3\sin^4 x$

15. $\dfrac{\sin^3 x-\cos^3 x}{\sin x-\cos x}=\dfrac{2+\sin 2x}{2}$

16. $\sin^2 x=\dfrac{1-\cos 2x}{2}$

The following identities require an understanding of double identity formulas.

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

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

18. $\cot a+\tan a=2\csc 2a$

$\dfrac{\sin x+\sin 2x+\sin 3x}{\cos x+\cos 2x+\cos 3x}=\tan 2x$