Math Analysis Worksheet 2
4.1 Identities

Prove the following identities.

1. $\sin^2\theta + \tan^2\theta + \cos^2\theta = \sec^2\theta$

2. $\sec^2\theta + \csc^2\theta = \sec^2\theta\csc^2\theta$

3. $\cos x\left(\sec x - \cos x\right) = \sin^2 x$

4. $\tan x + \cot x = \sec x \csc x$

5. $\cos x\left(\sec x + \cos x \csc^2 x\right) = \csc^2 x$

6. $\dfrac{\left(\cos x - \sin x\right)^2}{\sin x} = \csc x - 2\cos x$

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

8. $\dfrac{\cos x}{1-\sin x}+\dfrac{1-\sin x}{\cos x}=2\sec x$

9. $\dfrac{\cos x\sec x}{\tan x}=\cot x$