Prove the following identities: **3.** $\sin\theta\tan\theta + \cos\theta = \sec\theta$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$\sin^2\theta + \cos^2\theta = 1$

$LHS = \sin\theta \frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{1}$

$= \frac{\sin^2\theta + \cos^2\theta}{\cos\theta}$

$= \frac{1}{\cos\theta}$

$= \sec\theta$

1. $\text{cosec}\,\theta = \frac{1}{\sin\theta}$	**2.** $\sec\theta = \frac{1}{\cos\theta}$	**3.** $\tan\theta = \frac{\sin\theta}{\cos\theta}$
4. $\cot\theta = \frac{\cos\theta}{\sin\theta}$	**5.** $\sin^2\theta + \cos^2\theta = 1$	**6.** $1 + \tan^2\theta = \sec^2\theta$

Prove the following identities: **4.** $\frac{\sin\theta}{\sqrt{1-\sin^2\theta}} = \tan\theta$

$1 - \sin^2\theta = \cos^2\theta$

$LHS = \frac{\sin\theta}{\sqrt{\cos^2\theta}}$

$= \frac{\sin\theta}{\cos\theta}$

$= \tan\theta$

1. $\text{cosec}\,\theta = \frac{1}{\sin\theta}$	**2.** $\sec\theta = \frac{1}{\cos\theta}$	**3.** $\tan\theta = \frac{\sin\theta}{\cos\theta}$
4. $\cot\theta = \frac{\cos\theta}{\sin\theta}$	**5.** $\sin^2\theta + \cos^2\theta = 1$	**6.** $1 + \tan^2\theta = \sec^2\theta$

Prove the following identities: **5.** $\sec A - \sin A \tan A = \cos A$

$\sec\theta = \frac{1}{\cos\theta}$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$1 - \sin^2 A = \cos^2 A$

$LHS = \frac{1}{\cos A} - \sin A \frac{\sin A}{\cos A}$

$= \frac{1 - \sin^2 A}{\cos A}$

$= \frac{\cos^2 A}{\cos A}$

$= \cos A$

1. $\operatorname{cosec}\theta = \frac{1}{\sin\theta}$	**2.** $\sec\theta = \frac{1}{\cos\theta}$	**3.** $\tan\theta = \frac{\sin\theta}{\cos\theta}$
4. $\cot\theta = \frac{\cos\theta}{\sin\theta}$	**5.** $\sin^2\theta + \cos^2\theta = 1$	**6.** $1 + \tan^2\theta = \sec^2\theta$

Prove the following identities: **6.** $1 - \tan^2\theta\cos^2\theta = \cos^2\theta$

$\tan A = \frac{\sin A}{\cos A}$

$\tan^2 A = \frac{\sin^2 A}{\cos^2 A}$

$1 - \sin^2 A = \cos^2 A$

$LHS = 1 - \frac{\sin^2 A}{\cos^2 A}\cos^2 A$

$= \cos^2 A$

1. $\operatorname{cosec}\theta = \frac{1}{\sin\theta}$	**2.** $\sec\theta = \frac{1}{\cos\theta}$	**3.** $\tan\theta = \frac{\sin\theta}{\cos\theta}$
4. $\cot\theta = \frac{\cos\theta}{\sin\theta}$	**5.** $\sin^2\theta + \cos^2\theta = 1$	**6.** $1 + \tan^2\theta = \sec^2\theta$