Math 101 (03): Homework #6

due Tuesday, Oct.5

Simplify the following trigonometric expressions ("cot" means the cotangent function).

1. $\cos^2\alpha + \sin^4\alpha + \cos^2\alpha$

2. $\dfrac{\cos\alpha \cdot \tan\alpha}{\sin^2\alpha} - \cot\alpha\cos\alpha$

3. $\sin\alpha - \cos\alpha(\tan\alpha + \cot\alpha)$

4. $(\tan\alpha + \cot\alpha)^2 - (\tan\alpha - \cot\alpha)^2$

5. $\left(\dfrac{1}{\sin\alpha} + \cot\alpha\right)\left(\dfrac{1}{\sin\alpha} - \cot\alpha\right)$

6. $\dfrac{\tan\alpha}{1+\tan^2\alpha} - \dfrac{\cot\alpha}{1+\cot^2\alpha}$

7. $\dfrac{(1+\tan^2\alpha)(\cos^2\alpha - \sin^2\alpha)}{1-\tan^2\alpha}$