

NAME: _____ Score _____/10

Please **print** your name

Reference:

$$\cos(\alpha \pm \beta) = \cos \alpha \cos \beta \mp \sin \alpha \sin \beta$$

$$\sin(\alpha \pm \beta) = \sin \alpha \cos \beta \pm \cos \alpha \sin \beta$$

$$\sin 2\alpha = 2 \sin \alpha \cos \alpha$$

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

1. Prove $\cos^4 \beta - \sin^4 \beta = \cos 2\beta$

$$\text{Proof: } \cos^4 \beta - \sin^4 \beta = (\cos^2 \beta - \sin^2 \beta)(\cos^2 \beta + \sin^2 \beta) = (\cos^2 \beta - \sin^2 \beta)(1) = \cos 2\beta$$

2. Prove $\sec \beta - \sin \beta \tan \beta = \cos \beta$

$$\text{Proof: } \sec \beta - \sin \beta \tan \beta = \sec \beta - \sin \beta \left(\frac{\sin \beta}{\cos \beta} \right) = \frac{1}{\cos \beta} - \frac{\sin^2 \beta}{\cos \beta} = \frac{1 - \sin^2 \beta}{\cos \beta} = \frac{\cos^2 \beta}{\cos \beta} = \cos \beta$$