

Name _____ Date _____ Period _____

PreAP Precalculus Practice TEST: 5.1-5.4: Calculator OK. Show ALL steps

Part I: Trig Proofs

Prove 5 out of 6 Identities. Show all steps including substitutions and algebraic procedures.

1. $(\sin A + \cos A)^2 = 1 + 2 \cos A \sin A$

2. $\sec x(\sec x + 1) = \frac{\tan^2 x}{1 - \cos x}$

3. $\frac{\sin x}{\csc x} + \frac{\cos x}{\sec x} = 1$

4. $\frac{\sec^2 x - 7 \tan x + 11}{\sec^2 x - 17} = \frac{\tan x - 3}{\tan x + 4}$

5. $\frac{1 - \cos B}{\sin B} = \frac{\sin B}{1 + \cos B}$

6. $\frac{\sin A}{1 + \sec A} = \frac{\sin A \cos A}{\cos A + 1}$

Part II: Solving Trigonometric Equations

For each of the following, solve each trig function without a calculator, where $0 \leq x < 2\pi$. Show all work and give exact answers.

1. $\sin 2x = -2 \cos x$

2. $2 - 2 \cos^2 x - 5 \sin x = -2$

3. $5\sqrt{3} \tan x + 3 = 8\sqrt{3} \tan x$

Part III: Trig Proofs

Prove 5 out of 6 Identities. Show all steps including substitutions and algebraic procedures.

1. $\sqrt{2} \cos\left(x - \frac{\pi}{4}\right) = \cos x + \sin x$

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

3. $\tan^2 \frac{B}{2} = \csc^2 B - 2 \cot B \csc B + \cot^2 B$

4. $\tan\left(\frac{5\pi}{4} - \theta\right) = \frac{1 - \tan \theta}{1 + \tan \theta}$

5. $\cos 3x = \cos^3 x - 3 \sin^2 x \cos x$

6. $\cos 2\theta = \frac{1 - \tan^2 \theta}{1 + \tan^2 \theta}$