Name_____ Date_____ Period_____

Precal Matters: Practice TEST: 6.1-6.4: NO CALCULATOR.   Show ALL steps

Part I: Trig Proofs with Fundamental Identities
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. $\sec x(\sec x + 1) = \dfrac{\tan^2 x}{1 - \cos x}$

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

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

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

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

Part II: Solving Trigonometric Equations
For each of the following, solve each trig function without a calculator, where $0 \le x < 2\pi$. Show all work and give simplified, 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 with any Identities
Prove 5 out of 6 Identities. Show all steps including substitutions and algebraic procedures.

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

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

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

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

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

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