Pre-Calculus Chapter 5 Review Name ________________________ Period ______

Use the fundamental identities to verify each identity. Be organized with your work and include the reasons for each step.

1. $\csc x \cdot \tan x + \sec x = 2 \sec x$

2. $\dfrac{\sin x}{1+\cos x} + \dfrac{1+\cos x}{\sin x} = 2 \csc x$

3. $\dfrac{1+\tan^2 x}{1+\cot^2 x} = \tan^2 x$

4. $\dfrac{\tan x + \cot x}{\sec^2 x} = \cot x$

5. $\cos\left(\dfrac{\pi}{2} + x\right) = -\sin(x)$

6. $\sin(x+\pi) = -\sin(x)$

Use a sum or difference formula to find the exact value of each

7. $\cos(285^\circ)$

8. $\tan\left(\dfrac{7\pi}{12}\right)$

9. $\sin(15°)$

Write the expression as a sine, cosine, or tangent of a single angle. Simplify if possible.

10. $\cos(28^o)\cos(32^o) - \sin(28^o)\sin(32^o)$

11. $\sin\left(\dfrac{\pi}{16}\right)\cos\left(\dfrac{3\pi}{16}\right) + \cos\left(\dfrac{\pi}{16}\right)\sin\left(\dfrac{3\pi}{16}\right)$

Solve each equation. Write the complete solutions.

12. $4\cos 3x = 1 + 2\cos 3x$

13. $2\sin^2 x + \sin x - 1 = 0$

14. $\tan^2 x - \sec x - 1 = 0$

Solve each equation. Write the solution(s) from [0, 2π).

15. $\cos(2x) + \sin(x) = 0$

16. $\sin(2x)\sin x = \cos x$

Use the power reducing formulas to rewrite the expression in terms of the first power of cosine.

17. $\cos^4(2x)$

18. $\sin^2 4x \cos^2 4x$

$\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$	$\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$	$\tan(u \pm v) = \dfrac{\tan u \pm \tan v}{1 \mp \tan u \tan v}$
$\sin 2u = 2\sin u \cos u$	$\cos 2u = \begin{cases} \cos^2 u - \sin^2 u \\ 2\cos^2 u - 1 \\ 1 - 2\sin^2 u \end{cases}$	$\tan 2u = \dfrac{2\tan u}{1 - \tan^2 u}$
$\sin^2 u = \dfrac{1-\cos 2u}{2}$	$\cos^2 u = \dfrac{1+\cos 2u}{2}$	$\tan^2 u = \dfrac{1-\cos 2u}{1+\cos 2u}$