Algebra 2 / Trig—H HW #____ Name_____

14.7 & Review

Date_____

**** Show all work on your own paper.****

Simplify to a trig function of a single angle and find the exact value, in simplest form.

1. $2 \sin 105^\circ \cos 105^\circ$ 2. $\cos^2 \frac{5\pi}{12} - \sin^2 \frac{5\pi}{12}$ 3. $\frac{2\tan 157.5^\circ}{1 - \tan^2 157.5^\circ}$

4. $\sqrt{\frac{1 - \cos 120^\circ}{2}}$ 5. $-\sqrt{\frac{1 + \cos 480^\circ}{2}}$ 6. $\frac{\sin 600^\circ}{1 + \cos 600^\circ}$

Use a half-angle identity to find exact values, in simplest form:

7. $\sin 22.5^\circ$ 8. $\cos 165^\circ$ 9. $\tan 67.5^\circ$

Given: $\csc A = \frac{13}{5}$, *where* $\frac{\pi}{2} \le A < \pi$ *and* $\sec B = \frac{5}{3}$, *where* $\frac{3\pi}{2} < B \le 2\pi$.
Find exact values in simplest form.

10. $\sin 2A$ 11. $\cos 2A$ 12. $\tan 2A$ 13. $\cos \frac{B}{2}$

14. $\sin \frac{A}{2}$ 15. $\tan \frac{B}{2}$

16. Use a sum or difference identity to find $\cos 255^\circ$.

17. Prove the identity: $(\sin x + \cos x)^2 \equiv \sin 2x + 1$

18. Solve the equation for $0 \le x < 2\pi$: $\cot x = \tan 2x$

Answers: 1. $\sin 210^\circ, \frac{-1}{2}$ 2. $\cos 150^\circ, \frac{-\sqrt{3}}{2}$ 3. $\tan 315^\circ, -1$ 4. $\sin 60^\circ, \frac{\sqrt{3}}{2}$

5. $\cos 240^\circ, \frac{-1}{2}$ 6. $\tan 300^\circ, -\sqrt{3}$ 7. $\frac{\sqrt{2-\sqrt{2}}}{2}$ 8. $\frac{-\sqrt{2+\sqrt{3}}}{2}$

9. $\sqrt{2}+1$ 10. $\frac{-120}{169}$ 11. $\frac{119}{169}$ 12. $\frac{120}{119}$ 13. $\frac{-2\sqrt{5}}{5}$ 14. $\frac{5\sqrt{26}}{26}$

15. $\frac{-1}{2}$ 16. $\frac{-\sqrt{6}+\sqrt{2}}{4}$ 18. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{\pi}{2}, \frac{3\pi}{2}$