GIVE **EXACT ANSWERS** (NO DECIMALS) FOR ALL PROBLEMS
SHOW ALL WORK FOR FULL CREDIT — CIRCLE YOUR FINAL ANSWER

1. Solve for θ, $0° \leq \theta < 360°$:

$$2\cos(4\theta) - 1 = 0$$

2. Find the exact value of $\sin 345°$.

3. Find the exact value of

$$\sin 325° \cos 25° - \cos 325° \sin 25° =$$

4. Solve for x, $0 \leq x < 2\pi$: $\quad 2\sin x \tan x - \tan x = 0$

5. Solve for x, $0 \leq x < 2\pi$: $\quad \sin(2x) - 2\sin^2 x = 0$

6. Solve for x, $0 \leq x < 2\pi$: $\tan x - 2\sin x \cos x = 0$

7. Solve for x, $0 \leq x < 2\pi$: $\cos^3 x - \cos x = 0$

8. Solve for x, $0 \leq x < 2\pi$: $\quad 3(\sec x + 1) = \sec x + 7$

9. Verify the following identity. Be sure to show all steps for full credit.

$$\boxed{1 - \sin(2\theta)\tan\theta = \cos(2\theta)}$$

10. Verify the following identity. Be sure to show all steps for full credit.

$$\boxed{(\cos\theta - \sin\theta)(\cos\theta + \sin\theta) = 2\cos^2\theta - 1}$$

11. Verify the following identity. Be sure to show all steps for full credit.

$$\boxed{\sin\theta\cos^2\theta(\cot\theta + \tan\theta) = \cos\theta}$$

12. Verify the following identity. Be sure to show all steps for full credit.

$$\boxed{\frac{\sec\theta - \tan\theta}{1 - \sin\theta} = \sec\theta}$$

13. Verify the following identity. Be sure to show all steps for full credit.

$$\boxed{\sec^2\theta + \csc^2\theta = \sec^2\theta\csc^2\theta}$$

ANSWERS

1. $\theta = 15^\circ,\ 105^\circ,\ 195^\circ,\ 285^\circ;\quad 75^\circ,\ 165^\circ,\ 255^\circ,\ 345^\circ$

2. $\dfrac{1-\sqrt{3}}{2\sqrt{2}}$

3. $-\dfrac{\sqrt{3}}{2}$

4. $x = 0,\ \pi,\ \dfrac{\pi}{6},\ \dfrac{5\pi}{6}$

5. $x = 0,\ \pi,\ \dfrac{\pi}{4},\ \dfrac{5\pi}{4}$

6. $x = 0,\ \pi,\ \dfrac{\pi}{4},\ \dfrac{3\pi}{4},\ \dfrac{5\pi}{4},\ \dfrac{7\pi}{4}$

7. $x = 0,\ \pi,\ \dfrac{\pi}{2},\ \dfrac{3\pi}{2}$

8. $x = \dfrac{\pi}{3},\ \dfrac{5\pi}{3}$