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

1. Solve for $x$ ,	$0 \le x < 2\pi:$	2. Find the exact value of $\sin 195^\circ$ .	
	$\cos(2x) + \sin^2 x - 1 = 0$		(Hint: $195^{\circ} = 150^{\circ} + 45^{\circ}$ .)
		3.	Find the exact value of $\cos 165^{\circ}$ . ( <b>Hint</b> : $165^{\circ} = 120^{\circ} + 45^{\circ}$ .)

4. Solve for x,  $0 \le x < 2\pi$ :  $\sin(2x) + \cos x = 0$ 

5. Solve for x,  $0 \le x < 2\pi$ :  $2\tan^2 x - 6 = 0$ 

6. Solve for x,  $0 \le x < 2\pi$ :  $4\sin x - \csc x = 0$ 

7. Solve for x,  $0 \le x < 2\pi$ :  $\sin x \cos x + \cos^2 x = 0$ 

8. Solve for  $\theta$ ,  $0^{\circ} \le \theta < 360^{\circ}$ :  $\tan(3\theta) - 1 = 0$ 

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

$$\frac{1+\sin^2\theta}{\cos^2\theta} = 2\sec^2\theta - 1$$

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

$$\frac{\tan\theta + \cot\theta}{\sec\theta\csc\theta} = 1$$

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

 $\csc\theta - \cos\theta\cot\theta = \sin\theta$ 

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



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

$$\frac{\sec^2\theta - 1}{\sec^2\theta} = \sin^2\theta$$

## ANSWERS

- 1.  $x = 0, \pi$
- $2. \qquad \frac{1-\sqrt{3}}{2\sqrt{2}}$
- $3. \quad \frac{-1-\sqrt{3}}{2\sqrt{2}}$
- 4.  $x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$
- 5.  $x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$
- 6.  $x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$
- 7.  $x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{3\pi}{4}, \frac{7\pi}{4}$
- 8.  $\theta = 15^{\circ}, \ 135^{\circ}, \ 255^{\circ}, \ 75^{\circ}, \ 195^{\circ}, \ 315^{\circ}$