PreCalculus Name _____

Solving Trig Equations with Double and Half Angles WS

Solve over the interval $[0, 2\pi)$.

1. $\cos 2x = \cos x$

2. $\cos 2x + \cos x + 1 = 0$

3. $1 - \cos 2x - \sin x = 0$

4. $\sin^2 x + \cos 2x - \cos x = 0$

5. $\sin 2x = \cos x$

6. $3\cos 2x - 5\cos x = 1$

7. $\sin 2x \sin x + \cos 2x \cos x = 1$

8. $\cos 2x + 3\cos x = 1$

9. $\sin 2x - \sin x = 0$

10. $\cos 2x + \cos x = 0$

11. $\cos \frac{x}{2} - \sin x = 0$

12. $\sin \frac{x}{2} + \cos x - 1 = 0$

Answers: 1. $0, \frac{2\pi}{3}, \frac{4\pi}{3}$ 2. $\frac{2\pi}{3}, \frac{4\pi}{3}, \frac{\pi}{2}, \frac{3\pi}{2}$ 3. $0, \pi, \frac{\pi}{6}, \frac{5\pi}{6}$ 4. $0, \frac{\pi}{2}, \frac{3\pi}{2}$

5. $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6}$ 6. $\frac{2\pi}{3}, \frac{4\pi}{3}$ 7. 0 8. $\frac{\pi}{3}, \frac{5\pi}{3}$ 9. $0, \pi, \frac{\pi}{3}, \frac{5\pi}{3}$

10. $\pi, \frac{\pi}{3}, \frac{5\pi}{3}$ 11. $\pi, \frac{\pi}{3}, \frac{5\pi}{3}$ 12. $0, \frac{\pi}{3}, \frac{5\pi}{3}$