Name _____

Solve the following equations for $0 \le x < 2\pi$.

1. $\cos x - \cos \dfrac{1}{2} x = 0$

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

3. $\cos 3x - \cos^3 x = 3 \sin^2 x \cos x$

4. $\tan 2x - \tan x = 0$

5. $\cos 2x - \cos x = 0$

6. $2 \cos^2 \dfrac{x}{2} = 1$

7. $\tan \dfrac{x}{2} = 4$

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

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

10. $\cos^2 x - \cos 2x = 0$

11. $\dfrac{\cos 2x}{\cos^2 x} = 1$

12. $\cos 2x - 1 = \sin^2 x$

13. $\cos 2x = \cos x$

14. $\sin 2x - \cos 2x = 1$

15. $\sin^2 x - 2 = \cos 2x$

16. $\cot x + \tan x = 2 \csc 2x$

OMIT # 5 and #7
(weird decimal answers)

TRY #11, 15, 16
FOR FUN!
(interesting "answers")

1. $x = 0, \dfrac{2\pi}{3}, \pi, \dfrac{4\pi}{3}$

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

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

4. $x = 0, \pi$

5.   x = 2.237, 5.379

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

7.   x = 2.6516

8. $x = \dfrac{2\pi}{3}, \dfrac{4\pi}{3}, \dfrac{3\pi}{2}$

9. $x = 0, \dfrac{2\pi}{3}, \pi, \dfrac{4\pi}{3}$

10. $x = 0, \pi$

11.   no solution

12. $x = 0, \pi$

13. $x = 0, \dfrac{2\pi}{3}, \dfrac{4\pi}{3}$

14. $x = \dfrac{\pi}{4}, \dfrac{\pi}{2}, \dfrac{5\pi}{4}, \dfrac{3\pi}{2}$

15.   no solution

16.   infinitely many solutions