

Section 6.4 Extra Practice

1. Solve each equation algebraically over the domain $0 \leq x < 2\pi$.

a) $\sin 2x - \cos x = 0$
 b) $\cos 2x = 0$
 c) $2\cos^2 x - 1 = 0$
 d) $\cos^2 x - 2 = \cos x$

2. Solve each equation algebraically over the domain $0^\circ \leq x < 360^\circ$.

a) $\cos 2x = \cos 3x$
 b) $2\cos^2 x - 5\sin x - 5 = 0$
 c) $\cot^2 x = 0$

3. Rewrite each equation in terms of cosine only. Then, solve algebraically for $0 \leq x < 2\pi$.

a) $\cos 2x - 5\cos x = 2$
 b) $\cot^2 x + 2 = 0$
 c) $1 + \cos x = 2\sin^2 x$

4. Solve $2\cos^2 x = 1$ algebraically over the domain $-180^\circ \leq x \leq 180^\circ$.

5. Solve $\tan^2 x + 2\tan x + 1 = 0$ algebraically over the domain $0 \leq x < 2\pi$.

6. Determine the mistake the student made in the following work. Then, complete a correct solution.

$$\sin 2x = 1$$

$$\sin x = \frac{1}{2}$$

$$x = 60^\circ \text{ and } 120^\circ$$

7. A student is asked to write the equation of the general solution of the following equation: $\sin 2x = 1$

The solutions for this equation in the

domain $0 \leq x < 2\pi$ are $\frac{\pi}{4}, \frac{5\pi}{4}$.

The student writes the general solution as

$$\frac{\pi}{4} + 2\pi n, \frac{5\pi}{4} + 2\pi n; n \in \mathbb{I}.$$

- a) What error did the student make?
 b) Write the correct general solution for this equation.

8. a) Explain how to solve the equation $\cos x - 2\sin x \cos x = 0$ graphically, using the intersection feature of the graphing calculator.

- b) Solve the equation from part a) algebraically over the domain $0 \leq x < 2\pi$.

9. Solve $(\sin x - 1)(\tan x - 1) = 0$ algebraically for all values of x .

10. Solve the following equation for x . Give the general solution in degrees.

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

