NAME: _____ BLOCK: _____ DATE: _____

PMATH 12 - CHAPTER 7 - PRETEST signature

Multiple Choice - NON-CALCULATOR - 10 MINUTES (#1-4)
*CIRCLE the choice that **best** completes the statement or answers the question.*

1. Assume x is an angle in standard position with $\tan x = -\frac{6}{7}$.
   In which quadrant could the terminal arm of angle x lie?

   A. Quadrant 2 or 4 **B.** Quadrant 3 or 4 **C.** Quadrant 1 or 3 **D.** Quadrant 2 or 3

2. Write the expression $\sec^2\theta \cot^2\theta$ as a single term.

   A. $\csc^2\theta$ **B.** $\tan^2\theta$ **C.** $\cos^2\theta$ **D.** $\sin^2\theta$

3. Write the expression $\frac{\csc\theta \cot\theta \sin\theta}{\cos\theta}$ as a single term.

   A. $\cot\theta$
   B. $\csc\theta$
   C. $\cos\theta$
   D. $\sec\theta$

4. Write the expression $\sin 5\theta\cos 2\theta + \cos 5\theta\sin 2\theta$ as a single term.

   A. $\sin 3\theta$ **B.** $\sin 7\theta$ **C.** $\cos 3\theta$ **D.** $\cos 7\theta$

MULTIPLE CHOICE - CALCULATOR may be used after 10 minutes

5. What are the solutions of the equation $\tan x = -\frac{1}{2}$ for $0 \le x \le 2\pi$, to the nearest hundredth?

   A. $x \doteq 1.11$ or $x \doteq 2.68$
   B. $x \doteq 153.43$
   C. $x \doteq 2.68$ or $x \doteq 5.82$
   D. $x \doteq -0.55$

6. What are the solutions of the equation $\cos 2x = -\frac{1}{4}$ for $0 \le x \le \pi$, to the nearest hundredth?

   A. $x \doteq 0.91$ or $x \doteq 2.23$
   B. $x \doteq 0.91$ or $x \doteq 2.48$
   C. $x \doteq 52.24$
   D. $x \doteq 1.82$ or $x \doteq 4.46$

7. Which of these values of x is NOT a solution of the equation $\sin x = -\frac{1}{2}$?

   A. $x = \frac{7\pi}{6}$ **B.** $x = \frac{11\pi}{6}$ **C.** $x = \frac{-5\pi}{6}$ **D.** $x = \frac{2\pi}{3}$

8. What are the roots of the equation $2\tan x + 1 = 0$ for $-180° \le x \le 180°$, to the nearest degree?

A. $x \doteq 3°$
B. $x \doteq -27°$ or $x \doteq 153°$
C. $x \doteq -27°$ or $x \doteq 63°$
D. $x \doteq -0°$

9. Write the expression $\sec\theta\left(\sin^2\theta - 1\right)$ as a single term.

A. $\cos\theta$ B. $-\cos^2\theta$ C. $-\cos\theta$ D. $\sec^2\theta$

10. What is the exact value of the expression $\sin 40° \cos 95° + \cos 40° \sin 95°$?

A. -1 B. 1 C. $-\frac{1}{\sqrt{2}}$ D. $\frac{1}{\sqrt{2}}$

11. What is the solution of the equation $\sin 8x \cos 7x - \cos 8x \sin 7x = \frac{1}{\sqrt{2}}$ over the domain $0 \le x \le 2\pi$?

A. $x = \frac{5\pi}{4}$ or $x = \frac{7\pi}{4}$
B. $x = \frac{\pi}{4}$ or $x = \frac{5\pi}{4}$
C. $x = \frac{\pi}{4}$ or $x = \frac{3\pi}{4}$
D. $x = \frac{3\pi}{4}$ or $x = \frac{9\pi}{4}$

12. Write the expression $2\sin 4\theta \cos 4\theta$ as a single term.

A. $\cos 8\theta$ B. $\sin 10\theta$ C. $\cos 10\theta$ D. $\sin 8\theta$

13. What is the exact value of the expression $2\sin 15° \cos 15°$?

A. $-\frac{1}{2}$ B. $\frac{1}{2}$ C. $-\frac{1}{\sqrt{3}}$ D. $\frac{1}{\sqrt{3}}$

Short Answer

1. Write the general solution for the equation $\tan x = \frac{1}{2}$. Give the answers to the nearest hundredth.

2. Write the general solution of the equation $5(-3+\tan x) = -2\tan x - 16$.
Give the answers to the nearest hundredth of a radian.

3. Solve the equation $2\sin^2 x = 1$ over the domain $-4\pi \le x \le -3\pi$. Give exact answers.

4. Determine the exact value of $\cos 195°$.

Problem - show your work

1. a) Solve $-6\sin^2 x + \sin x = -3$ over the domain $0 \le x < 2\pi$. Give the roots to the nearest hundredth.

b) Determine the general solution of the equation.

2. Use algebra to solve the equation $8\sin^2 x + 4\sin x = 6\sin x$ over the domain $0 \le x \le 2\pi$. Give the answers to the nearest hundredth of a radian.

3. For the identity $\dfrac{\csc\theta\tan\theta}{\sec\theta} = 1$:

   a) Verify the identity for $\theta = \dfrac{\pi}{6}$.

   b) Prove the identity.

4. Prove the identity $\sec^2\theta = \sin\theta\csc\theta + \tan^2\theta$.

5. Prove the identity $(\sec\theta - \cos\theta)(\csc\theta - \sin\theta) = \dfrac{\tan\theta}{1+\tan^2\theta}$.

6. Prove the identity $\sin\left(\frac{\pi}{4}-\theta\right)=\cos\left(\frac{\pi}{4}+\theta\right)$.

7. Use algebra to solve the equation $\cos 2x+\sin^2 x=\frac{3}{4}$ over the domain $0\le x\le\pi$. Give exact answers.