Mathematics 3200
Test Unit IV

Name: _____

Part A: Place the letter corresponding to the correct answer to each of the following in the blank at the right.

1. What is 210^o as a radian measure? 1. ____

A) $\frac{\pi}{6}$ B) $\frac{7}{12}\pi$
C) $\frac{7}{6}\pi$ D) $\frac{7}{3}\pi$

2. What is the length of an arc cut off by a 150^0 sector in a circle with a diameter of 12 cm? 2. ____

A) 5 cm B) 7.85 cm
C) 15.7 cm D) 2826 cm

3. What is $\frac{5}{3}\pi$ radians as a degree measure? 3. ____

A) 5.2^o B) 150^o
C) 300^o D) 600^o

4. Which of the following angles is coterminal to $\frac{\pi}{6}$? 4. ____

A) $-\frac{5}{6}\pi$ B) $-\frac{\pi}{6}$
C) $\frac{7}{6}\pi$ D) $\frac{13}{6}\pi$

5. Which of the following angle measures is a quadrantel angle with sin having a value of 1? 5. ____

A) -630^o B) -90^0
C) 270^o D) 630^o

6. In which quadrant is sine positive and secant negative? 6. ____

A) I B) II
C) III D) IV

7. What is the reference angle for -240° ? 7. ____

A) -60° B) -30°
C) 30° D) 60°

8. What is the **exact** value of $\sec \frac{\pi}{6}$? 8. ____

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

9. Solve for θ : $\sqrt{2}\sin\theta = 1 \quad 0^{\circ} \le \theta < 2\pi$ 9. ____

A) $\frac{5}{4}\pi, \frac{7}{4}\pi$ B) $\frac{3}{4}\pi, \frac{5}{4}\pi$
C) $\frac{1}{4}\pi, \frac{5}{4}\pi$ D) $\frac{1}{4}\pi, \frac{7}{4}\pi$

10. Which of the following pairs of trig ratios are reciprocals of each other? 10. ___

A) sine and cosine B) sine and secant
C) cosine and secant D) cosine and cosecant

11. If the point P(-3, 5) is on the terminal arm for θ in standard position, what is the measure of θ ? 11. ___

A) 59° B) 121°
C) 239° D) 301°

12. Solve for x $\tan x = -1$ 12. ___

A) $\frac{\pi}{4} \pm \frac{\pi}{2}n, n \in W$ B) $\frac{\pi}{4} \pm \pi n, n \in W$
C) $-\frac{\pi}{4} \pm \frac{\pi}{2}n, n \in W$ D) $-\frac{\pi}{4} \pm \pi n, n \in W$

Part B : Answer each question and show all workings.

1. Simplify $\dfrac{\sin\ \frac{\pi}{3}+\sec\ \frac{5}{3}\pi+\tan\ 135^\circ}{\csc\ 225^\circ}$ leaving your answer as an **EXACT** value.

2. Solve each of the following trigonometric equations for θ where $0^\circ \le \theta < 2\pi$.

A) $\sqrt{3}\tan\ \theta\ -1=0$

B) $\cos^2\theta\ -\ \cos\ \theta=0$

C) $2\csc^2\theta + \csc\theta - 1 = 0$

3. If $\sec\theta = -\frac{13}{12}$, where $0° \le \theta < 2\pi$, what is the value of $\cos\theta$ *and* $\cot\theta$.