Algebra II - Chapter 14 Practice

Name: _____

Please work on a separate sheet of paper. Show all work. Box your answers. This worksheet is due Tuesday at the end of class.

1. Given that $\sin\theta = \frac{3}{8}$ and $\frac{\pi}{2} < \theta < \pi$, find the values of the other five trigonometric functions of θ.

Simplify each expression.

2. $\sin\left(\frac{\pi}{2} - x\right)\sec x$

3. $\cos\left(\frac{\pi}{2} - x\right)\sec x$

4. $\csc x \cos(-x)$

5. $\frac{\sin^2(-x)}{\tan^2 x}$

6. Solve $4\sin^2 x - 1 = 0$ in the interval $0 \le x < 2\pi$.

7. Solve $4\cos^2 x - 1 = 0$ in the interval $0 \le x < 2\pi$.

8. Solve $2\sin^2 x - \sin x - 1 = 0$ in the interval $0 \le x < 2\pi$.

9. Solve $4\sin^2 x = 2$.

10. What is the general solution of $\cos x \tan x = \cos x$?

11. Solve $2\sin^2 x + 3\sin x - 4 = 0$ in the interval $0 \le x < \pi$.

12. Solve $1 - 2\tan x = \sec x$ in the interval $-\frac{\pi}{2} < x < \frac{\pi}{2}$.

13. Find the exact value of $\sin 15°$.

14. Find $\sin(A + B)$ given that $\sin A = \frac{6}{7}$ with $\frac{\pi}{2} \le A \le \pi$ and $\cos B = \frac{2}{5}$ with $-\frac{\pi}{2} \le B \le 0$.

15. Simplify the expression $\sin\left(x - \frac{5\pi}{2}\right)$.

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Answer Section

1. ANS:
   $\cos\theta = -\frac{\sqrt{55}}{8}$; $\tan\theta = -\frac{3\sqrt{55}}{55}$; $\cot\theta = -\frac{\sqrt{55}}{3}$; $\sec\theta = -\frac{8\sqrt{55}}{55}$; $\csc\theta = \frac{8}{3}$
2. ANS:
   1
3. ANS:
   $\tan x$
4. ANS:
   $\cot x$
5. ANS:
   $\cos^2 x$
6. ANS:
   $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$
7. ANS:
   $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$
8. ANS:
   $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$
9. ANS:
   $x = \frac{\pi}{4} + n\pi$ or $x = \frac{3\pi}{4} + n\pi$, where n is any integer.
10. ANS:
    $x = \frac{\pi}{4} + n\pi$, where n is any integer.
11. ANS:
    $x \approx 1.02$
12. ANS:
    $x = 0; x \approx 0.93$ is an extraneous solution.
13. ANS:
    $\frac{1}{4}(\sqrt{6} - \sqrt{2})$
14. ANS:
    $\frac{12+\sqrt{273}}{35}$
15. ANS:
    $\sin\left(x - \frac{5\pi}{2}\right) = -\cos x$