

Test 3 Pretest, Chapters 5 and 6

This pretest is now complete. Please check the web site later for answers.

1. For each item in Column I, give the letter of the item in Column II that is equivalent to it.

| <u>Answer</u> | <u>Column I</u> | <u>Column II</u> | <u>Scratch Work</u> |
|---------------|--------------------------------------|--------------------|---------------------|
| _____ A. | $\frac{\csc\theta}{\sec\theta}$ | a. $\sec^2\theta$ | |
| _____ B. | $\sec\theta \tan\theta \csc\theta$ | b. $\tan^2\theta$ | |
| _____ C. | $\sin\theta \cot\theta + \cos\theta$ | c. $\sin(2\theta)$ | |
| _____ D. | $\frac{2\tan\theta}{\sec^2\theta}$ | d. $\cos\theta$ | |
| _____ E. | $(\sec\theta - 1)(\sec\theta + 1)$ | e. $2\cos\theta$ | |
| _____ F. | $\sec\theta - \tan\theta \sin\theta$ | f. $\sin^2\theta$ | |
| | | g. $\csc\theta$ | |
| | | h. $\cos^2\theta$ | |
| | | i. $\cot\theta$ | |
| | | j. $\cos(2\theta)$ | |

2. Using the sum, difference, double angle, or half angle formulas, evaluate the following.

| | |
|--|---|
| a) $\cos(35^\circ) \cos(115^\circ) - \sin(35^\circ) \sin(115^\circ)$ | b) $1 - 2\sin^2\left(\frac{3\pi}{8}\right)$ |
| c) $\tan\left(\frac{5\pi}{8}\right)$ | d) $\sqrt{\frac{1 - \cos 240^\circ}{2}}$ |

3. Given that $\sec\theta = \frac{5}{3}$ and $270^\circ < \theta < 360^\circ$, evaluate the following.

| | |
|--------------------|--------------------|
| a) $\cos(2\theta)$ | b) $\sin(2\theta)$ |
|--------------------|--------------------|

4. Prove each identity.

| | |
|--|--|
| a) $(1 - \cos^2\theta)(1 + \cot^2\theta) = 1$ | b) $\frac{\cot\theta \tan\theta - \cos^2\theta}{\cos\theta \tan\theta} = \sin\theta$ |
| c) $\frac{\sec\theta}{\sec^2\theta - 1} = \cot\theta \csc\theta$ | d) $\frac{\sin\theta}{1 - \cos\theta} = \csc\theta + \cot\theta$ |

5. Find all radian solutions for x .

a) $\sec x = -2$

b) $\cot x = \sqrt{3}$

6. Find all degree solutions for θ .

a) $\csc \theta = \sqrt{2}$

b) $\tan \theta = -1$

7. Solve each equation for $0 \leq x < 2\pi$.

a) $2 \cos^2 x - 1 = 0$

b) $2 \sin 2x + \sqrt{3} = 0$

8. Solve each equation for $0^\circ \leq \theta < 360^\circ$.

a) $2 \cos^2 \theta + 5 \sin \theta + 1 = 0$

b) $4 \cos^2 \left(\frac{1}{3} \theta \right) - 3 = 0$

9. Evaluate each. Denominators do not need to be rationalized.

a) $\cos \left(\cos^{-1} \frac{2}{5} \right)$

b) $\tan \left(\tan^{-1} \frac{3}{2} \right)$

c) $\sin \left(\cos^{-1} \frac{2}{5} \right)$

d) $\sec \left(\tan^{-1} \frac{3}{2} \right)$

e) $\cos \left(2 \tan^{-1} \frac{\sqrt{5}}{2} \right)$

f) $\sin \left(2 \sec^{-1} \frac{3}{\sqrt{7}} \right)$