

CH-7 Assignment

Part A:

Show work for ALL questions on separate sheets, then record the answers on the “Response Form”.

1. What are the exact roots of the equation $\tan x - 1 = 0$ for $-\pi \leq x \leq \pi$?

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

2. What are the non-permissible values of θ for $\sec \theta \cot \theta$.

A. $\theta \neq \frac{\pi}{2} + 2\pi k, k \in \mathbf{Z}$ C. $\theta \neq \frac{\pi}{2} + \pi k, k \in \mathbf{Z}$
B. $\theta \neq \frac{\pi k}{2}, k \in \mathbf{Z}$ D. $\theta \neq \pi k, k \in \mathbf{Z}$

3. Which expression is equivalent to $\frac{\sin(2B)}{2\sin^2 B}$?

A. $\tan B$ C. $\frac{2}{\sin B}$
B. $2\csc B$ D. $\cot B$

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

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

5. Write the expression $\frac{\sqrt{\tan^2 \theta + 1}}{\sqrt{-\sin^2 \theta + 1}}$ as a single term.

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

6. What is the exact value of the expression $\sin \frac{\pi}{6} \cos \frac{7\pi}{12} + \cos \frac{\pi}{6} \sin \frac{7\pi}{12}$?

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

16. Write the expression $-\sec^2 \theta - \cot^2 \theta + \tan^2 \theta$ as a single term.
17. Determine the exact value of $\sin 165^\circ$.
18. Write the expression $\frac{\tan^2 \theta - 2 \sec^2 \theta + 1}{\cos \theta}$ as a single term.
19. Write the expression $\frac{\cos^2 \theta}{1 - \cos \theta} + \frac{\cos^2 \theta}{1 + \cos \theta}$ as a single term.
20. Solve the equation $-2 \sin x - 2 = -7 \sin x - 1$ over the domain $0 \leq x \leq 2\pi$.
Give the answers to the nearest hundredth.

Part C:

Show all work for this part on the Response Form

21. Prove the identity for all permissible values of the angle:

$$\frac{\cot \theta - \csc \theta}{1 - \sec \theta} = \cot \theta.$$

22. Prove the identity for all permissible values of the angle:

$$\sin\left(\frac{\pi}{3} - \theta\right) + \sin\left(\frac{\pi}{3} + \theta\right) = \sqrt{3} \cos \theta.$$

23. Use algebra to solve the equation $-9 \cos^2 x - 3 \cos x = -2$ over the domain $0 \leq x \leq 360^\circ$.
Give the answers to the nearest degree.