

Trigonometry Test #3 Practice Problems

** Make sure you have your identities memorized!!

1. Find $\cos 2\theta$ given that $\cos \theta = -\frac{5}{13}$ and θ is in Quadrant III.

2. Use the half-angle identity to evaluate $\tan \frac{11\pi}{12}$ exactly. Rationalize the denominator of your answer.

3. Find all solutions (in radians) in the interval $0 \leq x < 2\pi$. $\cos 3x + \frac{\sqrt{3}}{2} = 0$

4. Find the exact value of $\cos \frac{13\pi}{12} \cos \frac{5\pi}{12} + \sin \frac{13\pi}{12} \sin \frac{5\pi}{12}$.

5. Prove the identity. Show ALL steps in order to receive full credit.

$$\frac{1}{1 + \cos x} - \frac{1}{1 - \cos x} = -2 \cot x \csc x$$

6. Given $\cos a = -\frac{5}{13}$, a is in Quadrant II, $\sin b = -\frac{3}{5}$, and b is in Quadrant III, find $\sin(a - b)$.

7. Evaluate $\cot\left(\sin^{-1}\frac{3}{5}\right)$.

8. Find all solutions (in radians) in the interval $0 \leq x < 2\pi$. $\cos x = 2 \sin^2 x \cos x$

9. Prove the identity. Show ALL steps in order to receive full credit.

$$\cot x \cos 2x = \cot x - \sin 2x$$

10. Prove the identity. Show ALL steps in order to receive full credit.

$$\sin 3x - \sin^3 x = 3 \sin x - 5 \sin^3 x$$