

PCPAP Review: 5.1-5.4

NO CALCULATOR!!!!!!

Solve the following Identities on a separate sheet of paper

Prove the identity.

1) $(\sin x)(\tan x \cos x - \cot x \cos x) = 1 - 2 \cos^2 x$

2) $\cos x \csc x \tan x = 1$

3) $\frac{\cot^2 x}{\csc x - 1} = \frac{1 + \sin x}{\sin x}$

4) $\sec^4 x - \tan^4 x = \sec^2 x + \tan^2 x$

5) $\frac{\sin x + \cos x}{\sin x - \cos x} = \frac{1 + 2 \sin x \cos x}{2 \sin^2 x - 1}$

6) $\sin^3 x \cos^2 x = \sin x (\cos^2 x - \cos^4 x)$

7) $\frac{\cos x}{\sec x - 1} - \frac{\cos x}{\sec x + 1} = \frac{2 \cos x}{\tan^2 x}$

8) $\cos\left(x + \frac{\pi}{6}\right) = \frac{\sqrt{3}}{2} \cos x - \frac{1}{2} \sin x$

9) $\cos 4x + \cos 2x = 2 - 2 \sin^2 2x - 2 \sin^2 x$

10) $\cos(x - y) - \cos(x + y) = 2 \sin x \sin y$

11) $\cos 4u = \cos^2 2u - \sin^2 2u$

12) $\cos 3x = \cos^3 x - 3 \sin^2 x \cos x$

Find all solutions in the interval $[0, 2\pi)$.

13) $\cos^2 x + 2 \cos x + 1 = 0$

14) $2 \sin^2 x = \sin x$

15) $\cos x = \sin x$

16) $\sec^2 x - 2 = \tan^2 x$

$$17) \sin(\cos x) = 0$$

$$18) \cos x = \sin 2x$$

$$19) \cos x - \cos 3x = 0$$

Find an exact value using a composite identity. Be sure to identify which two values you are using.

$$20) \sin \frac{11\pi}{12}$$

$$21) \cos \frac{\pi}{12}$$

$$22) \tan \frac{7\pi}{12}$$

Write the expression as the sine, cosine, or tangent of an angle.

$$23) \sin \frac{\pi}{5} \cos \frac{\pi}{11} + \cos \frac{\pi}{5} \sin \frac{\pi}{11}$$

$$24) \cos 7x \cos 2x - \sin 7x \sin 2x$$