*AAT

Chapter 7: Quiz 7.1-7.3 Review (IC/HW)

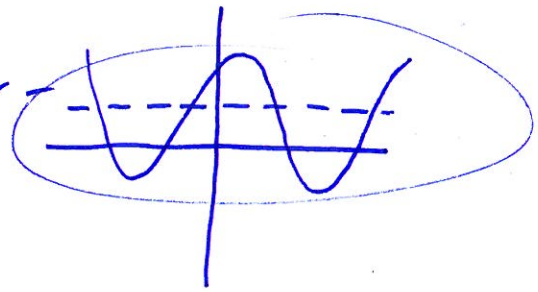
Name: Key

Date: _____ Period: _____

1. Verify the identity as either invalid or valid.

$\sqrt{sin^2t + cos^2t}$ = sin t + cos t

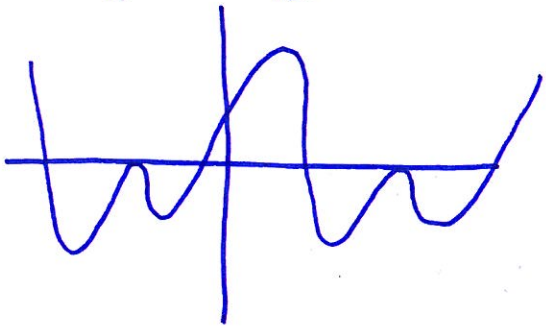
$\sqrt{1} \neq \sin t + \cos t$ - or -



2. Verify the identity as either invalid or valid.

$3\cos^2\theta + \cos\theta - 2 = 0.$

y_1 y_2



3. Make the trig substitution x = a sec θ for $0 < \theta < \frac{\pi}{2}$ and a>0. Use fundamental identities to simplify the resulting expression. $x^3\sqrt{x^2 - a^2}$.

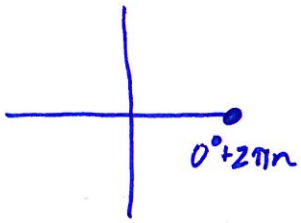
$a^3\sec^3\theta\sqrt{a^2\sec^2\theta - a^2}$

$a^3\sec^3\theta\sqrt{a^2(\sec^2\theta - 1)}$

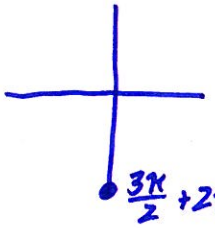
$a^3\sec^3\theta\sqrt{a^2(\tan^2\theta)}$

$a^4\sec^3\theta\tan\theta$

4. Find all solutions of the equation (cos θ − 1)(sin θ + 1) = 0.



$0° + 2\pi n$



$\frac{3\pi}{2} + 2\pi n$

$\cos\theta - 1 = 0$

$\cos\theta = 1$

$2\pi n$

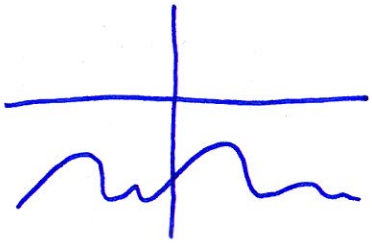
$\sin\theta + 1 = 0$

$\sin\theta = -1$

$\frac{3\pi}{2} + 2\pi n$ - or - $-\frac{\pi}{2} + 2\pi n$

5. Find all solutions of the equation that are in the interval [0, 2π).

$\sin^2x + \sin x - 3 = 0$ (not factorable ... so graph)



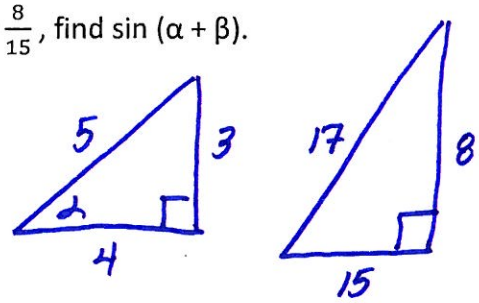
$\emptyset$

6. If α and β are acute angles such that $\cos\alpha = \frac{4}{5}$ and $\tan\beta = \frac{8}{15}$, find $\sin(\alpha + \beta)$.

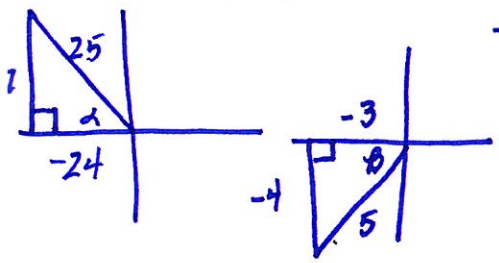
$\sin\alpha\cos B + \cos\alpha\sin B$

$= \frac{3}{5}\cdot\frac{15}{17} + \frac{4}{5}\cdot\frac{8}{17}$

$= \frac{45}{85} + \frac{32}{85} = \frac{77}{85}$



7. If $\tan\alpha = -\frac{7}{24}$ and $\cot\beta = \frac{3}{4}$ for a second-quadrant angle α and a third-quadrant angle β, find $\tan(\alpha - \beta)$.



$$\frac{\tan\alpha - \tan B}{1 + \tan\alpha\tan B} = \frac{-\frac{7}{24} - \frac{4}{3}}{1 + \left(\frac{-7}{24}\right)\left(\frac{4}{3}\right)} = \frac{-\frac{39}{24}}{\frac{44}{72}} = \frac{-\frac{13}{8}}{\frac{11}{18}} = \frac{-117}{44}$$

8. Indicate whether the reduction formula is correct or incorrect.

$\cos(\theta - \pi) = -\cos\theta$

$\cos(\theta - \pi) = \cos\theta\cos\pi + \sin\theta\sin\pi$

$\cos\theta(-1) + \sin\theta(0)$

$-\cos\theta$

9. Indicate whether the following equation is an identity.

$\cos(\theta + \frac{\pi}{4}) = \frac{\sqrt{2}}{2}(\cos\theta - \sin\theta)$

$\cos(\theta + \frac{\pi}{4}) = \cos\theta\cos\frac{\pi}{4} - \sin\theta\sin\frac{\pi}{4}$

$\cos\theta\cdot\frac{\sqrt{2}}{2} - \sin\theta\cdot\frac{\sqrt{2}}{2}$

$\frac{\sqrt{2}}{2}(\cos\theta - \sin\theta)$

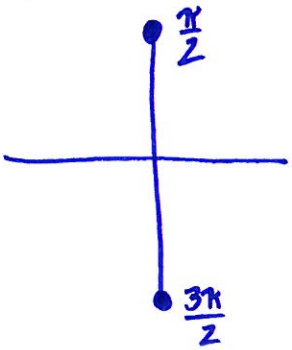
10. Use an addition or subtraction formula to find the solutions of the equation that are in the interval $[0, \pi)$.

$\cos 8t\cos 5t = -\sin 8t\sin 5t$

$\cos 8t\cos 5t + \sin 8t\sin 5t = 0$

$\cos(8t - 5t) = 0$

$\cos(3t) = 0$



$\frac{3t}{3} = \frac{\frac{\pi}{2} + 2\pi n}{3}$

$t = \frac{\pi}{6} + \frac{2\pi}{3}n$

$\frac{3t}{3} = \frac{\frac{3\pi}{2} + 2\pi n}{3}$

$t = \frac{\pi}{2} + \frac{2\pi}{3}n$

$n = 0, n = 1$

$* \; t = \frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}$