Pre-Calc
Quiz Sections 7.1-7.2

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Best Wishes To: Key

1. If $\cos\theta = \frac{2}{5}$, and $0° < \theta < 90°$ find $\sec\theta$.

$\sec\theta = 5/2$ /2

Q3

2. If $\cot\theta = \frac{5}{8}$, and $\pi < \theta < \frac{3\pi}{2}$ find $\csc\theta$.

$\cot^2\theta + 1 = \csc^2\theta$ /2

$\left(\frac{5}{8}\right)^2 + \frac{64}{64} = \csc^2\theta$

$\frac{89}{64} = \csc^2\theta$

$\csc\theta = -\frac{\sqrt{89}}{8}$

Express each value as a trigonometric function of an angle in Quadrant I.

3. $\cos(-485°) = \cos 235$

235 − 180 = 55

$-\cos 55$ /2

4. $\sin\frac{20\pi}{9} \cdot \frac{180}{\pi} = 400$

$= \sin 40$ /2

$\frac{2\pi}{9}$

Simplify each expression.

5. $(\cos^2 x)(\sec x)(\tan x)$ /12

$\cos^2 x \cdot \frac{1}{\cos x} \cdot \frac{\sin x}{\cos x}$

$= \sin x$

6. $(\sec\theta - \tan\theta)(1 + \sin\theta)$

$\sec\theta + \sec\theta\sin\theta - \tan\theta - \tan\theta\sin\theta$

$\frac{1}{\cos\theta} + \frac{1}{\cos\theta}\sin\theta - \tan\theta - \frac{\sin\theta}{\cos\theta}\cdot\sin\theta$

$\frac{1}{\cos\theta} - \frac{\sin^2\theta}{\cos\theta} = \frac{1-\sin^2\theta}{\cos^2\theta} = \frac{\cos^2\theta}{\cos\theta}$

$= \cos\theta$

7. $\frac{1-\cos^2 A}{1+\cot^2 A} = \frac{\sin^2 A}{\csc^2 A}$

$= \frac{\sin^2 A}{\frac{1}{\sin^2 A}} = \sin^2 A \cdot \sin^2 A$

$= \sin^4 A$

8. $\csc x - \csc x\cos^2 x$

$\csc x(1 - \cos^2 x)$

$\frac{1}{\sin x} \cdot \sin^2 x$

$= \sin x$

Find a numerical value of one trig function of each x.

9. $\frac{\csc x}{\cot x} = \sqrt{2}$

$\frac{1}{\sin x} \cdot \frac{\sin x}{\cos x} = \sqrt{2}$

$\frac{1}{\cos x} = \sqrt{2}$

$\sec x = \sqrt{2}$

/8

10. $2\tan x \sin x + 2\cos x = \csc x$

$2\left(\frac{\sin^2 x}{\cos x} + \cos x\right) = \csc x$

$2\left(\frac{\sin^2 x + \cos^2 x}{\cos x}\right) = \frac{1}{\sin x}$

$2\left(\frac{1}{\cos x}\right) = \frac{1}{\sin x}$

$2 = \frac{\cos x}{\sin x}$

$2 = \cot x$

Verify each identity.

11. $\frac{\sin A}{\csc A} + \frac{\cos A}{\sec A} = \csc^2 A - \cot^2 A$

$\frac{\sin A}{\frac{1}{\sin A}} + \frac{\cos A}{\frac{1}{\cos A}} = 1$

$\sin^2 A + \cos^2 A = 1$

$1 = 1$

/12

12. $\left(\frac{1-\cos x}{1-\cos x}\right)\frac{\sin x}{1+\cos x} = \frac{1-\cos x}{\sin x}$

$\frac{(1-\cos x)\sin x}{1-\cos^2 x} = \downarrow$

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

$\frac{1-\cos x}{\sin x} = \frac{1-\cos x}{\sin x}$

13. $\sec^2 x - \tan x \cot x = \tan^2 x$

$\sec^2 x - \frac{\sin x}{\cos x} \cdot \frac{\cos x}{\sin x} = \tan^2 x$

$\sec^2 x - 1 = \tan^2 x$

$\tan^2 x = \tan^2 x$

14. $(\sin x)(\tan x) = \sec x - \cos x$

$\frac{\sin^2 x}{\cos x}$

$\frac{1-\cos^2 x}{\cos x}$

$\frac{1}{\cos x} - \frac{\cos^2 x}{\cos x}$

$\sec x - \cos x = \sec x - \cos x$

Extra Credit: Verify that $\frac{1-\cos\theta}{1+\cos\theta} = (\csc\theta - \cot\theta)^2$ is an identity.

$\frac{1 - 2\cos\theta + \cos^2\theta}{1-\cos^2\theta}$

$\frac{1}{\sin^2\theta} - \frac{2\cos\theta}{\sin^2\theta} + \frac{\cos^2\theta}{\sin^2\theta} = (\csc\theta - \cot\theta)^2$

$(\csc\theta - \cot\theta)^2 = (\csc\theta - \cot\theta)^2$

$\csc^2\theta - 2\cot\theta\csc\theta + \cot^2\theta = (\csc\theta - \cot\theta)^2$