Check on Calculator!

C12 - 6.0 - Trig Identities Review

1) Simplify.
a) sinxsecx
b) tanxcscx
c) sinxcscx
$d)\ \sin^2 x\csc x$
$e)\ \cos^2 x\tan^2 x$
$f)\ \dfrac{\sin x}{\tan x}$
$g)\ \dfrac{\sec x}{\tan x}$
$h)\ \dfrac{\cos x\tan x}{\sec x}$
$i)\ \dfrac{\csc x\tan x}{\csc x}$

2) Simplify
$a)\ \cot x + \csc x$
$b)\ \sin x + \csc x$
$c)\ \cos x + \sin x\tan x$
$d)\ \sec x - \tan x\sin x$

3) Simplify
$a)\ \dfrac{1}{\sin^2 x} - 1$
$b)\ \dfrac{1}{1-\sin x} + \dfrac{1}{1+\sin x}$

4) Simplify
$a)\ \dfrac{1+\frac{1}{\sin x}}{\cot x}$
$b)\ \dfrac{\tan x}{1+\frac{1}{\cos x}}$
$c)\ \dfrac{1+\tan x}{1+\cot x}$

5) Prove.
a) tanxcscx | secx
$b)\ \frac{\tan x}{\cos x} \mid \frac{\sin x}{\cos^2 x}$
$c)\ \cot x + \csc x \mid \dfrac{\cos x + 1}{\sin x}$
$d)\ \sec x - \tan x\sin x \mid \cos x$
$e)\ \cos x + \sin x\tan x \mid \sec x$
$f)\ \dfrac{\sin x\cos x + \sin x}{\cos x + \cos^2 x} \mid \tan x$

6) Prove.
$a)\ \csc^2 x - \frac{\cot x}{\sin x} \mid \frac{1}{1+\cos x}$
$b)\ \sec x \sin^2 x + \cos x \mid \sec x$
$c)\ 1 + \dfrac{1}{\tan^2 x} \mid \csc^2 x$
$d)\ \frac{1}{1-\cos x} + \frac{1}{1+\cos x} \mid 2\csc^2 x$
$e)\ \dfrac{\sin x}{1+\cos x} + \dfrac{\sin x}{1-\cos x} \mid 2\csc x$
$f)\ (\sin x - \cos x)^2 \mid 1 - \sin 2x$
$g)\ 3 - \sin^2 x \mid 2 + \cos^2 x$

7) Prove.
a) $\frac{1+\sin x}{1+\csc x} \mid \frac{\sin x}{1-\sin x}$
$b)\ \dfrac{\csc x}{1+\csc x} \mid \dfrac{1}{1+\sin x}$
$c)\ \frac{\sin x}{1+\cos x} \mid \frac{1-\cos x}{\sin x}$
$d)\ \sec x + \tan x \mid \dfrac{\cos x}{1-\sin x}$
$e)\ \dfrac{\frac{1}{\cos x} - \cos x}{1 - \frac{\sin x}{\cos x}} \mid \dfrac{\sin^2 x}{\cos x - \sin x}$

8) Expand.
a) $\sin(x-\pi)$
b) $\cos\left(x + \dfrac{\pi}{4}\right)$
$c)\ \cos(3x)$

9) Find Exact Value.
a) $\cos 15^o$
$b)\ \sin 105^o$
c) $\cos\left(\frac{\pi}{12}\right)$
$d)\ \cos\left(\frac{7\pi}{12}\right)$
$e)\ \sec 15^o$
$f)\ \sin 255^o$
$g)\ \cos 285^o$
$h)\ \tan 75 =$

10) Simplify.
a) $\cos 2x\sin x + \sin 2x\cos x =$
b) $\cos\left(\frac{\pi}{3}\right)\cos\left(\frac{\pi}{6}\right) + \sin\left(\frac{\pi}{3}\right)\sin\left(\frac{\pi}{6}\right) =$
c) $\cos\left(\frac{\pi}{6}+x\right)\cos\left(\frac{\pi}{6}-x\right) + \sin\left(\frac{\pi}{6}+x\right)\sin\left(\frac{\pi}{6}-x\right) =$
$d)\ \dfrac{\tan\left(\frac{4\pi}{3}\right) - \tan(\pi)}{1 + \tan\left(\frac{4\pi}{3}\right)\tan(\pi)}$

11) Simplify.
a) $4\sin 3x\cos 3x =$
$b)\ 8\sin\left(\frac{\pi}{4}\right)\cos\frac{\pi}{4} =$
c) $\cos^2\frac{1}{2}x - \sin^2\frac{1}{2}x =$
$d)\ 2\cos^2 2x + 2\sin^2 2x =$
$e)\ 1 - 2\sin^2\frac{x}{2} =$
$f)\ 2\cos^2\frac{\pi}{2} - 1 =$
$g)\ 3 - 6\sin^2 3x =$

12) Prove.
a) tanx | $\dfrac{\sin 2x}{1+\cos 2x}$
$b)\ \cot x - \tan x \mid \dfrac{4\cos^2 x - 2}{\sin 2x}$
c) $\sin(x+y) - \sin(x-y) \mid 2\cos x\sin y$
$d)\ \sin 3x \mid 3\sin x - 4\sin^3 x$

13) Prove with/w/out conjugate.
$\dfrac{\cos 2x}{\sin 2x + 1} \mid \dfrac{1-\tan x}{1+\tan x}$

14) $If:\ \sin\alpha = \frac{4}{5}\ ;QI\ \&\ \cos\beta = -\frac{5}{12}\ ;QII$
$Find$:
a) $\sin(\alpha+\beta) =$
$b)\ \sin 2\alpha =$
$c)\ \cos 2\beta =$

15) Find θ_{stp}.
(Identities/SquareBothSides)
$a)\ \sin 2\theta + \cos\theta = 0$
$b)\ \sin\theta - \cos^2\theta - 1 = 0$
$c)\ \sin\theta + \cos 2\theta = 0$
d) $\cos\theta\cos 2\theta - \sin\theta\sin 2\theta = -1$
$e)\ \sin 2x = \cot x$
$f)\ 1 + \cos\theta = \sin\theta$