# Worksheet Review Trig. Identities (basic)

Date_____ Period____

**Verify each identity.**

1) $\dfrac{\tan^2 x - \sec^2 x}{\cos x} = -\sec x$

2) $\tan x + \sec x = \dfrac{1 + \sin x}{\cos x}$

3) $\dfrac{\sec x}{\sin^3 x} = \dfrac{\csc^3 x}{\cos x}$

4) $\cos x + \sec x = \dfrac{\cos^2 x + 1}{\cos x}$

5) $\cot^2 x + 1 = \dfrac{1}{\sin^2 x}$

6) $\tan x \csc x \sec x = \tan^2 x + 1$

7) $\sin^2 x\left(\tan^2 x + 1\right) = \dfrac{\tan x}{\cot x}$

# Answers to Worksheet Review Trig. Identities (basic) (ID: 1)

1) $\dfrac{\tan^2 x - \sec^2 x}{\cos x}$ Use $\tan^2 x + 1 = \sec^2 x$

$-\dfrac{1}{\cos x}$ Use $\sec x = \dfrac{1}{\cos x}$

$-\sec x$ ■

2) $\tan x + \sec x$ Decompose into sine and cosine

$\dfrac{\sin x}{\cos x} + \dfrac{1}{\cos x}$ Simplify

$\dfrac{1 + \sin x}{\cos x}$ ■

3) $\dfrac{\sec x}{\sin^3 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\csc^3 x \sec x$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{\csc^3 x}{\cos x}$ ■

4) $\cos x + \sec x$ Decompose into sine and cosine

$\cos x + \dfrac{1}{\cos x}$ Simplify

$\dfrac{\cos^2 x + 1}{\cos x}$ ■

5) $\cot^2 x + 1$ Use $\cot^2 x + 1 = \csc^2 x$

$\csc^2 x$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{1}{\sin^2 x}$ ■

6) $\tan x \csc x \sec x$ Decompose into sine and cosine

$\dfrac{\sin x}{\cos x} \cdot \dfrac{1}{\sin x} \cdot \dfrac{1}{\cos x}$ Simplify

$\dfrac{1}{\cos^2 x}$ Use $\sec x = \dfrac{1}{\cos x}$

$\sec^2 x$ Use $\tan^2 x + 1 = \sec^2 x$

$\tan^2 x + 1$ ■

7) $\sin^2 x(\tan^2 x + 1)$ Use $\tan^2 x + 1 = \sec^2 x$

$\sin^2 x \sec^2 x$ Use $\sec x = \frac{1}{\cos x}$

$\frac{\sin^2 x}{\cos^2 x}$ Use $\cot x = \frac{\cos x}{\sin x}$

$\frac{1}{\cot^2 x}$ Use $\cot x = \frac{1}{\tan x}$

$\frac{\tan x}{\cot x}$ ■