Trig Identities Worksheet

Geometry

Grades 6 to 8

Skill Questions

Name: ....

Date: ....

1 Circle the trig function that is equal to $\dfrac{1}{\sin\ x}$

$\sec\ x$ $\tan\ x$ $\csc\ x$ $\cot\ x$ $\cos\ x$

2 Circle the trig function that is equivalent to $\dfrac{1}{\tan\ x}$

$\sec\ x$ $\tan\ x$ $\csc\ x$ $\cot\ x$ $\cos\ x$

3 Circle the trig function that is equivalent to $\dfrac{\cos\ x}{\sin\ x}$

$\sec\ x$ $\tan\ x$ $\csc\ x$ $\cot\ x$ $\cos\ x$

4 Circle the expression that is equivalent to $sec\ x\ cos\ x$

-1 $-\cos\ x$ $-\sec\ x$ **1**

5 Circle the expression that is equivalent to $tan\ x\ cos\ x$

$\cos^2 x$ $\sin^2 x$ $\sin\ x$ $\cos\ x$ $\cot\ x$

6 Circle the expression that is equivalent to $\dfrac{\sin\theta\sec\theta}{\tan\theta}$

1   -1 $\dfrac{\sin\theta}{\cos\theta}$ $\sin\theta$

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7 Find the value of $2(\cos(45)) + \sin(30)$

Write the answer in simplest radical form.

Answer

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8 Find the value of $\tan(30) + \sin(60)$

Write the answer in simplest radical form.

Answer

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9 Find the value of $\dfrac{\cos(60) + 1}{\sin(30)}$

Write the answer in simplest form.

Answer

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10 Circle the expression that is equivalent to $\dfrac{\sin\theta\csc\theta}{\cot\theta}$

$\cot\theta$ $\csc\theta$ $\tan\theta$ $\sin\theta$

Applied Questions

11 Verify the identity:

$$\frac{\tan\theta + \cot\theta}{\tan\theta} = \csc^2\theta$$

Answer

12 Verify the identity:

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

Answer

13 Verify the identity:

$$\sin\theta\,\cot\theta\,\sec\theta = 1$$

Answer

14 Verify the identity:

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

Answer

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15 Verify the identity:

$$\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} = 1$$

Answer

Answers

Question number	Question	Answers	Standard
1	Circle the trig function that is equal to $\dfrac{1}{\sin\ x}$ $\sec\ x \quad \tan\ x \quad \csc\ x \quad \cot\ x \quad \cos\ x$	$\sec x \quad \tan x \quad \boxed{\csc x} \quad \cot x \quad \cos x$	HSF.TF.C.8
2	Circle the trig function that is equivalent to $\dfrac{1}{\tan\ x}$ $\sec\ x \quad \tan\ x \quad \csc\ x \quad \cot\ x \quad \cos\ x$	$\sec x \quad \tan x \quad \csc x \quad \boxed{\cot x} \quad \cos x$	HSF.TF.C.8
3	Circle the trig function that is equivalent to $\dfrac{\cos\ x}{\sin\ x}$ $\sec\ x \quad \tan\ x \quad \csc\ x \quad \cot\ x \quad \cos\ x$	$\sec x \quad \tan x \quad \csc x \quad \boxed{\cot x} \quad \cos x$	HSF.TF.C.8
4	Circle the expression that is equivalent to $\sec\ x\ \cos\ x$ $-1 \qquad -\cos\ x \qquad -\sec\ x \qquad 1$	$-1 \quad -\cos x \quad -\sec x \quad \boxed{1}$	HSF.TF.C.8
5	Circle the expression that is equivalent to $tan\ x\ cos\ x$ $\cos^2 x \quad \sin^2 x \quad \sin\ x \quad \cos\ x \quad \cot\ x$	$\cos^2 x \quad \sin^2 x \quad \boxed{\sin x} \quad \cos x \quad \cot x$	HSF.TF.C.8
6	Circle the expression that is equivalent to $\dfrac{\sin\theta\sec\theta}{\tan\theta}$ $1 \qquad -1 \qquad \dfrac{\sin\theta}{\cos\theta} \qquad \sin\ \theta$	$\boxed{1} \quad -1 \quad \dfrac{\sin\theta}{\cos\theta} \quad \sin\theta$	HSF.TF.C.8
7	Find the value of $2(\cos(45))+\sin(30)$ Write the answer in simplest radical form.	$\sqrt{2}+\dfrac{1}{2}$ or $\dfrac{2\sqrt{2}+1}{2}$	HSF.TF.C.8

Trig Identities Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
8	Find the value of $\tan{(30)} + \sin{(60)}$ Write the answer in simplest radical form.	$\dfrac{5\sqrt{3}}{6}$	HSF.TF.C.8
9	Find the value of $\dfrac{\cos(60) + 1}{\sin(30)}$ Write the answer in simplest form.	3	HSF.TF.C.8
10	Circle the expression that is equivalent to $\dfrac{\sin\theta\ \csc\theta}{\cot\theta}$ $\cot\theta \quad \csc\theta \quad \tan\theta \quad \sin\theta$	$\cot\theta \quad \csc\theta \quad \boxed{\tan\theta} \quad \sin\theta$	HSF.TF.C.8
11	Verify the identity: $\dfrac{\tan\theta + \cot\theta}{\tan\theta} = \csc^2\theta$	$\dfrac{\tan\theta + \cot\theta}{\tan\theta} =$ $\dfrac{\tan\theta}{\tan\theta} + \dfrac{\cot\theta}{\tan\theta} =$ $1 + \cot\theta\ \cot\theta =$ $\quad\quad 1 + \cot^2\theta = \csc^2\theta$	HSF.TF.C.8
12	Verify the identity: $\dfrac{\cos^2\theta}{1 - \sin\theta} = 1 + \sin\theta$	$\dfrac{\cos^2\theta}{1 - \sin\theta} =$ $\dfrac{1 - \sin^2\theta}{1 - \sin^2\theta} =$ $\dfrac{(1 - \sin\theta)(1 + \sin\theta)}{1 - \sin\theta} =$ $\quad\quad = 1 + \sin\theta$	HSF.TF.C.8
13	Verify the identity: $\sin\theta\ \cot\theta\ \sec\theta = 1$	$\sin\theta\ \cot\theta\ \sec\theta =$ $\sin\theta\ \dfrac{\cos\theta}{\sin\theta}\ \dfrac{1}{\cos\theta} = 1$	HSF.TF.C.8

Trig Identities Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
14	Verify the identity: $$\frac{\cos x}{1+\sin x} + \frac{1+\sin x}{\cos x} = 2\sec x$$	$$\frac{\cos x}{1+\sin x} + \frac{1+\sin x}{\cos x} =$$ $$\frac{\cos x(\cos x) + (1+\sin x)(1+\sin x)}{(1+\sin x)(\cos x)} =$$ $$\frac{\cos^2 x + 1 + 2\sin x + \sin^2 x}{(1+\sin x)(\cos x)} =$$ $$\frac{1+1+2\sin x}{(1+\sin x)(\cos x)} =$$ $$\frac{2+2\sin x}{(1+\sin x)(\cos x)} =$$ $$\frac{2(1+\sin x)}{(1+\sin x)(\cos x)} =$$ $$\frac{2}{\cos x} =$$ $$= 2\sec x$$	HSF.TF.C.8
15	Verify the identity: $$\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} = 1$$	$$\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} =$$ $$\frac{(\sin^2 x + \cos^2 x)(\sin^2 x - \cos^2 x)}{\sin^2 x - \cos^2 x} =$$ $$\sin^2 x + \cos^2 x = 1$$	HSF.TF.C.8

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