

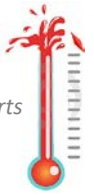
TRIG EQUATIONS & IDENTITIES PRACTICE QUIZ

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Name: _____

Fun-scale: off the charts



1. Consider the equation $3\cos x - 5 = 5\cos x - 4$.

(a) Algebraically determine any solutions on $-180^\circ \leq x < 180^\circ$

 $\frac{1}{2}$

(b) State a general solution

 $\frac{1}{1}$ $\frac{3}{3}$

2. Algebraically solve on $0 \leq \theta < 2\pi$.

$\frac{2}{2} \rightarrow 2 \cos^2 \theta - 3 \cos \theta + 1 = 0$

3. Solve on $0 \leq \theta < 360^\circ \rightarrow 3\csc\theta + 4 = 0$

$\frac{2}{2}$ Round answers to the nearest degree.

 $\frac{4}{4}$

4. Simplify each expression to one of the three primary trig functions. ($\sin x$, $\cos x$, or $\tan x$)

a) $\frac{1}{1} \sec x \cot x \sin^2 x$

b) $\frac{1}{1} \frac{\sin x}{\tan x}$

c) $\frac{1}{1} \frac{\sin 2\theta}{2\cos\theta}$

 $\frac{7}{7}$

d) $\frac{2}{2} \frac{\cos 2\theta + 1}{2\cos\theta}$

e) $\frac{2}{2} \frac{\cos^3 x}{\cos 2x + \sin^2 x}$

5. Write each as a single trigonometric function.

a) $\cos 43^\circ \cos 28^\circ - \sin 43^\circ \sin 28^\circ$

b) $2\cos^2 \frac{\pi}{12} - 1$

c) $\frac{2\tan 76^\circ}{1 - \tan^2 76^\circ}$

 $\frac{3}{3}$

6. Consider the equation $\frac{\sec x}{\tan x + \cot x} = \sin x$
- a) Numerically verify the possibility of an identity using $x = 60^\circ$. What value do you get for both sides?

- b) State the non-permissible values of the equation on the domain $0^\circ \leq x < 360^\circ$

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(c) BONUS Prove this identity (on scrap paper)

7. Simplify $\cos\left(\frac{\pi}{2} - x\right)$ using a difference identity.

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8. Given that θ is in quadrant II and $\sin\theta = \frac{5}{13}$, determine the exact value of:

a) $\frac{\cos 2\theta}{2}$

b) $\frac{\sin(\theta + 90^\circ)}{2}$

4

9. If $\angle A$ is in quadrant I with $\cos A = \frac{12}{13}$ and $\angle B$ is in quadrant III with $\sin B = \frac{-4}{5}$, evaluate $\sin(A + B)$

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10. Use an appropriate sum/difference formula to determine the exact value of: *show all steps on scrap paper – provide simplified exact-value answers here*

a) $\frac{\sin 165^\circ}{2}$

b) $\frac{\tan \frac{17\pi}{12}}{2}$

11. Prove each identity

a) $\frac{\cos x}{\cot x} * \csc x$

b) $\frac{\sin x + \cos x \cot x}{2} = \csc x$

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