

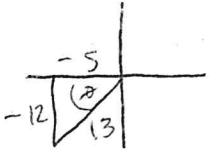
Kery

Trigonometric Honors

Practice Test

Use the fundamental identities to find the value of the trigonometric function.

- 1) Find $\cos \theta$ if $\sin \theta = -\frac{12}{13}$ and $\tan \theta > 0$.
 II IV III I



$\cos \theta =$

1) $-\frac{5}{13}$

Use basic identities to simplify the expression.

2) $\frac{\csc \theta \cot \theta}{\sec \theta}$

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

2) \cot^2

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

3) \csc^2

4) $\sin^2 \theta + \tan^2 \theta + \cos^2 \theta$

$$\tan^2 + \sin^2 + \cos^2$$

$$\tan^2 + 1$$

4) \sec^2

Simplify the expression.

5) $\sin(-x) \csc x$

$$-1 \sin(x) \csc(x)$$

$$(-1)(1)$$

5) -1

6) $\cos\left(\frac{\pi}{2} - x\right) \csc(-x)$

$$(\sin x) + (\csc x)$$

6) -1

7) $\frac{\sec x}{\sin x} - \frac{\cos x}{\sin x}$

$$\frac{\frac{1}{\cos} - \frac{\cos}{1}}{\sin} = \frac{\frac{\sin^2}{\cos}}{\frac{\sin}{1}} = \frac{\sin^2}{\cos} \cdot \left(\frac{\sin}{\cos}\right) \left(\frac{1}{\sin}\right) = \tan$$

7) $\tan(x)$

$$8) \frac{\cos x}{1 - \sin x} + \frac{1 - \sin x}{\cos x}$$

$$8) \underline{2 \sec}$$

Write each expression in factored form as an algebraic expression of a single trigonometric function. $(\cos^2 - 1)(\cos + 2)$

$$9) \cos x - (\sin^2 x) - 1 \quad \cos^2 + \cos - 2$$

$$\cos = (1 - \cos^2) - 1 \quad (\cos - 1)(\cos + 2)$$

$$\cos - 1 + \cos^2 - 1$$

$$9) \underline{\hspace{2cm}}$$

Find an exact value.

$$10) \sin 105^\circ$$

$$= \sin(60^\circ + 45^\circ) = \sin 60 \cos 45 + \sin 45 \cos 60 = \left(\frac{1}{2}\right)\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\frac{\sqrt{2}}{2} = \frac{\sqrt{2} + \sqrt{6}}{4}$$

$$10) \underline{\frac{\sqrt{2} + \sqrt{6}}{4}}$$

$$11) \tan 75^\circ$$

$$= \tan(30 + 45) = \frac{\tan 30^\circ + \tan 45^\circ}{1 - \tan 30^\circ \tan 45^\circ} = \frac{\frac{1}{\sqrt{3}} + 1}{1 - \frac{1}{\sqrt{3}}}$$

$$11) \underline{\frac{1 + \frac{1}{\sqrt{3}}}{1 - \frac{1}{\sqrt{3}}}}$$

$$12) \sin \frac{11\pi}{12}$$

$$= \sin\left(\frac{8\pi}{12} + \frac{3\pi}{12}\right) = \sin \frac{2\pi}{3} \cos \frac{\pi}{4} + \sin \frac{\pi}{4} \cos \frac{2\pi}{3}$$

$$= \left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{2}}{2}\right)\left(-\frac{1}{2}\right) = \frac{\sqrt{6} - \sqrt{2}}{4}$$

$$12) \underline{\frac{\sqrt{6} - \sqrt{2}}{4}}$$

$$13) \cos \frac{-7\pi}{12}$$

$$= \cos\left(-\frac{\pi}{3} - \frac{\pi}{4}\right) = \cos \frac{-\pi}{3} \cos \frac{\pi}{4} + \sin \frac{-\pi}{3} \sin \frac{\pi}{4}$$

$$\left(-\frac{1}{2}\right)\left(\frac{\sqrt{2}}{2}\right) + \left(-\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right)$$

$$13) \underline{\frac{\sqrt{2} - \sqrt{6}}{4}}$$

Write the expression as the sine, cosine, or tangent of an angle.

$$14) \sin 49^\circ \cos 11^\circ - \cos 49^\circ \sin 11^\circ$$

$$\sin(49^\circ - 11^\circ)$$

$$14) \underline{\sin 38^\circ}$$

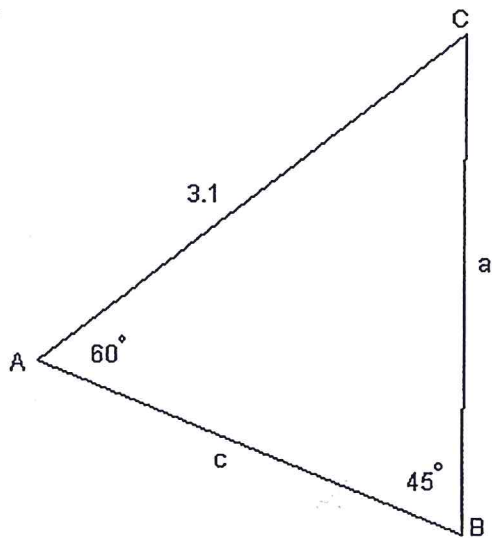
$$15) \cos 133^\circ \cos 58^\circ + \sin 133^\circ \sin 58^\circ$$

$$\cos(133^\circ - 58^\circ)$$

$$15) \underline{\cos 75^\circ}$$

Solve the triangle.

16)



16) _____

$$\begin{aligned} A &= 60^\circ & a &= 3.8 \\ B &= 45^\circ & b &= 11 \\ C &= 75^\circ & c &= 4.2 \end{aligned}$$

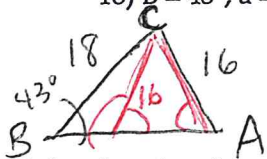
17) $A = 40^\circ, B = 29^\circ, b = 11$

$$\begin{aligned} A &= 40^\circ & a &= 14.5 \\ B &= 29^\circ & b &= 11 \\ C &= 111^\circ & c &= 21 \end{aligned}$$

17) _____

triangles can be formed using the given measurements. Solve both triangles.

18) $B = 43^\circ, a = 18, b = 16$



$$\begin{aligned} A &= 129.9^\circ & a &= 18 \\ B &= 43^\circ & b &= 16 \\ C &= 7.1^\circ & c &= 2.9 \end{aligned}$$

$$\begin{aligned} A &= 50.1 & a &= 18 \\ B &= 43 & b &= 16 \\ C &= 86.9^\circ & c &= 23.4 \end{aligned}$$

18) _____

Solve the triangle.

19) $A = 53^\circ, a = 18.3, b = 25.4$

$$\frac{\sin 53^\circ}{18.3} = \frac{\sin B}{25.4}$$

$$\sin B = 1.1 \quad \sin^{-1}(1.1) = \text{domain error}$$

19) No triangle

20) $b = 22, c = 29, A = 80^\circ$

$$a^2 = 22^2 + 29^2 - 2(22)(29)\cos 80$$

$$a = 33.2$$

$$\begin{aligned} A &= 80 & a &= 33.2 \\ B &= 40.7 & b &= 22 \\ C &= 59.3^\circ & c &= 29 \end{aligned}$$

20) _____

