

Express the given trigonometric function in terms of the indicated function.

1) $\sec \theta$ in terms of $\sin \theta$

Complete the sentence so the result is an identity. Let x be any real number.

7) $\frac{\sin x}{\tan x} = \underline{\hspace{2cm}}$

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

2) Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{10}}{3}$ and $\sin \theta < 0$.

8) $\underline{\hspace{2cm}} + \sin^2 x = 1$

Use the fundamental identities to simplify the expression.

3) $1 - \cos^2 \theta$

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

9) Find $\sec s$ if $\tan s = \frac{3}{4}$ and s is in quadrant I.

4) $\frac{\tan \theta}{\cot \theta}$

Express the given trigonometric function in terms of the indicated function.

10) $\tan \theta$ in terms of $\cos \theta$

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

5) Find $\cot s$ if $\tan s = \frac{\sqrt{7}}{3}$ and s is in quadrant III.

11) $\csc \theta$ in terms of $\cot \theta$

6) Find $\csc \theta$ if $\cot \theta = -\sqrt{15}$ and θ is in quadrant II.

Use the fundamental identities to find an equivalent expression involving only sines and cosines, and then simplify it.

$$12) \frac{\sec \theta \csc \theta}{\tan \theta \cot \theta}$$

$$13) \sec \theta + \csc \theta$$

Perform the indicated operations and simplify the result.

$$14) \frac{\sec \theta \sin \theta}{\tan \theta} - 1$$

$$15) 2 \tan \theta - (1 + \tan \theta)^2$$

Factor the trigonometric expression.

$$16) 1 - \sin^3 x$$

$$17) \sec^4 x - 2 \sec^2 x \tan^2 x + \tan^4 x$$

Use the fundamental identities to simplify the expression.

$$18) \frac{\csc \theta \cot \theta}{\sec \theta}$$

$$19) \frac{\cos^2 \theta}{\sin^2 \theta} + \csc \theta \sin \theta$$

$$20) \tan^2 \theta \csc^2 \theta$$

Simplify the expression.

$$21) \frac{\sec^2 x}{\tan x} - \tan x$$

$$22) \frac{1 + \tan^2 x}{\sec x}$$

$$23) \frac{\cos^2 x}{\sin^2 x} + \cos x \sec x$$

Decide whether the expression is or is not an identity.

24) $1 + \tan^2 t = \sec^2 t$

25) $\sec t = \frac{1}{\sin t}$

26) $\sec^2 t - \tan^2 t = 1$

Identify the equation as either an identity or not.

27) $(\sin x + \cos x)^2 = 1$

28) $\frac{\cot^2 x}{\csc x - 1} = \frac{1 + \sin x}{\sin x}$

29) $\cos^2 x - \sin^2 x = 1 - 2 \sin^2 x$

Decide whether the expression is or is not an identity.

30) $\sqrt{\sin^2 x} = \sin x$

31) $\sqrt{\sec^2 x - \tan^2 x} = 0$

Use an appropriate identity to find the exact value of the expression.

32) $\cos\left(\frac{17\pi}{9}\right) \cos\left(\frac{\pi}{9}\right) - \sin\left(\frac{17\pi}{9}\right) \sin\left(\frac{\pi}{9}\right)$

33) $\cos\left(\frac{19\pi}{12}\right)$

34) $\cos(195^\circ)$

35) $\cos(-105^\circ)$

Write in terms of the cofunction of a complementary angle.

36) $\csc(-7^\circ 9')$

37) $\tan 147^\circ 46'$

Use the cofunction identities to find an angle θ that makes the statement true.

38) $\tan \theta = \cot (30^\circ + 5\theta)$

39) $\sec \theta = \csc \left(\frac{\theta}{3} - 10^\circ\right)$

Use the identities for the cosine of a sum or a difference to write the expression as a single function of x .

40) $\cos (x - 270^\circ)$

41) $\cos (90^\circ - x)$

Find the exact value of the expression using the provided information.

42) Find $\cos(B + C)$ given that $\sin B = -\frac{1}{2}$, with B in quadrant IV, and $\sin C = \frac{1}{4}$, with C in quadrant II.

43) Find $\cos(A + B)$ given that $\cos A = -\frac{1}{6}$, with A in quadrant III, and $\cos B = -\frac{3}{5}$, with B in quadrant III.

44) Find $\cos(A + B)$ given that $\cos A = \frac{1}{3}$, with A in quadrant I, and $\sin B = -\frac{1}{2}$, with B in quadrant IV.

45) Find $\cos(A - B)$ given that $\cos A = -\frac{3}{5}$, with A in quadrant II, and $\cos B = \frac{5}{13}$, with B in quadrant IV.

Tell whether the statement is true or false.

46) $\cos 54^\circ = \cos 59^\circ \cos 5^\circ - \sin 59^\circ \sin 5^\circ$

Solve the problem.

47) A household outlet has voltage given by $V = 154 \sin \omega t$, where ω is the angular velocity of the generator in radians per second and t is time in seconds. If $\omega = 120\pi$ radians per second, what is the maximum voltage in this outlet?

Answer Key

Testname: 6.1-6.2PRAC

1) $\frac{\pm\sqrt{1 - \sin^2 \theta}}{1 - \sin^2 \theta}$

2) $-\frac{1}{3}$

3) $\sin^2 \theta$

4) $\tan^2 \theta$

5) $\frac{3\sqrt{7}}{7}$

6) 4

7) $\cos x$

8) $\cos^2 x$

9) $\frac{5}{4}$

10) $\frac{\pm\sqrt{1 - \cos^2 \theta}}{\cos \theta}$

11) $\pm\sqrt{1 + \cot^2 \theta}$

12) $\frac{1}{\sin \theta \cos \theta}$

13) $\frac{\sin \theta + \cos \theta}{\sin \theta \cos \theta}$

14) 0

15) $-\sec^2 \theta$

16) $(1 - \sin x)(1 + \sin x + \sin^2 x)$

17) 1

18) $\cot^2 \theta$

19) $\csc^2 \theta$

20) $\sec^2 \theta$

21) $\cot x$

22) $\sec x$

23) $\csc^2 x$

24) Identity

25) Not an identity

26) Identity

27) Not an identity

28) Identity

29) Identity

30) Not an identity

31) Not an identity

32) 1

33) $\frac{\sqrt{2}(\sqrt{3} - 1)}{4}$

34) $\frac{-\sqrt{2}(\sqrt{3} + 1)}{4}$

35) $\frac{-\sqrt{2}(\sqrt{3} - 1)}{4}$

36) $\sec 97^\circ 9'$

37) $\cot -57^\circ 46'$

38) $\theta = 10^\circ$

39) $\theta = 75^\circ$

40) $-\sin x$

41) $\sin x$

42) $\frac{1 - 3\sqrt{5}}{8}$

43) $\frac{3 - 4\sqrt{35}}{30}$

44) $\frac{\sqrt{3} + 2\sqrt{2}}{6}$

45) $-\frac{63}{65}$

46) FALSE

47) 154