

Trig Semester 1 Review**Chapter 1 Review:****Convert the angle measure to degrees, rounded to two decimal places.**

- 1)
- $54^\circ 45'$
- 2)
- $245^\circ 12'$
- 3)
- $85^\circ 18' 30''$

Convert each angle to Degrees Minutes Seconds ($D^\circ M' S''$).

- 4)
- 72.355°
- 5)
- 35.715°

Determine the coterminal angle of the given angle, and find its reference angle. Draw the angle, marking the coterminal and reference angles.

- 6)
- 487°
- 7)
- -795°
- 8)
- $\frac{14\pi}{3}$
- 9)
- $\frac{-41\pi}{6}$

Evaluate (find the exact value).

- 10)
- $\sin\frac{5\pi}{4}$
- 11)
- $\tan\pi$
- 12)
- $\sec\frac{5\pi}{6}$
- 13)
- $\cos 240^\circ$
- 14)
- $\cot 315^\circ$
- 15)
- $\csc 120^\circ$

Find the exact values of the six trigonometric functions of angle θ whose terminal side passes through the given point.

- 16)
- $\left(\frac{-3}{5}, \frac{4}{5}\right)$
- 17)
- $\left(\frac{8}{17}, \frac{-15}{17}\right)$
- 18)
- $\left(\frac{-5}{13}, \frac{-12}{13}\right)$

- 19) Find the exact values of the six trigonometric functions of angle
- θ
- given
- θ
- terminates in Quadrant III and
- $\cos\theta = \frac{-1}{3}$
- .

- 20) Evaluate (find the exact value)
- $\sec 60^\circ \tan 135^\circ - \cot 60^\circ \sin 60^\circ$
- .

- 21) Sketch a right triangle with an acute angle of
- 28°
- . If the hypotenuse is 46 inches long, how long is the side opposite the
- 28°
- angle? Round your answer to two decimal places.

- 22) A right triangle has legs 31 inches and 42 inches. What is the measure of the larger acute angle, correct to the nearest minute?

- 23) Suppose there is a 457-meter tall tower in Redlands that casts a shadow 1050 meters long on the ground at a certain time of day. What is the angle of elevation of the sun at that time of day?

Use your calculator to determine the following angles to two decimal places. Watch the mode.

- 24)
- $\theta = \sin^{-1}(0.5937)$
- 25)
- $x = \tan^{-1}(-1.3281)$

Chapter 2 Review:**Convert each angle to radian measure.
Show your work.**

- 26)
- 140°
- 27)
- -425°

**Convert each angle to degrees.
Show your work.**

- 28)
- $\frac{4\pi}{3}$
- 29)
- $\frac{11\pi}{8}$

Find the exact values of the given expressions.

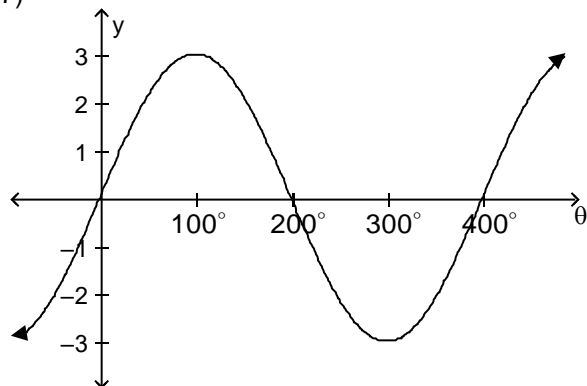
- 30)
- $\tan\frac{3\pi}{4} - \cos\frac{5\pi}{6}$
- 31)
- $\csc\frac{11\pi}{6}$
- 32)
- $\sin^2\frac{7\pi}{6} + \cos^2\frac{\pi}{4}$

Find the amplitude, period, phase displacement, and vertical displacement. Then use this information to find critical points and draw the graph of the given function.

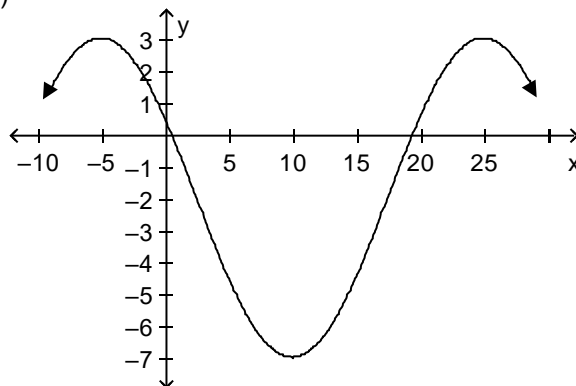
- 33)
- $y = 3\sin(2x)$
- 34)
- $y = \frac{1}{2}\cos\left(\frac{2}{3}\theta\right)$
- 35)
- $y = 2 + 4\sin\left[5(\theta - 10^\circ)\right]$
- 36)
- $y = -3 + 5\cos\left(\frac{\pi}{12}(x - 1)\right)$

For the given graph, determine the amplitude, period, phase displacement, and vertical displacement. Write an equation of the sinusoid.

37)



38)



Graph at least two cycles of the given function.

39) $y = \tan \theta$

40) $y = \sec x$

41) $y = 2 \cot x$

42) $y = \csc(3\theta)$

Find the exact principal value of θ or x .

43) $\theta = \sin^{-1}\left(\frac{1}{2}\right)$

44) $x = \cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

45) $x = \sin^{-1}(-1)$

46) $\theta = \cos^{-1}\left(\frac{-1}{2}\right)$

Find θ to two decimal places and x to 4 decimal places, getting

a) the general solution,

b) the first three positive values of θ or x .

47) $\theta = \cos^{-1}(-0.42)$

48) $x = \sin^{-1}(0.7136)$

Chapter 3 Review:

Use trigonometric properties to simplify.

49) $\tan \theta \csc \theta$

50) $\cos\left(\frac{\pi}{2} - x\right) \sec x$

51) $\sin^2 x \sec^2 x - \sin^2 x$

52) $\cos \theta (1 + \tan^2 \theta)$

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

54) $\tan^4 x + 2 \tan^2 x + 1$

55) $\frac{1}{\sec x + 1} - \frac{1}{\sec x - 1}$

56) $\sin^4 A - \cos^4 A$

57) $\frac{\csc \theta}{\sec \theta}$

Prove each identity.

58) $(1 - \tan \theta)^2 = \sec^2 \theta - 2 \tan \theta$

59) $\frac{1 - \cos^2 x}{\tan x} = \sin x \cos x$

60) $\sin x (\csc x - \sin x) = \cos^2 x$

Find the exact value using sum and difference formulas.

61) $\cos(45^\circ + 60^\circ)$

62) $\sin\left(\frac{3\pi}{4} + \frac{5\pi}{6}\right)$

63) $\sin(210^\circ - 60^\circ)$

64) $\cos\left(\frac{2\pi}{3} - \frac{\pi}{6}\right)$

Find the exact value given that $\sin u = \frac{5}{13}$, $\cos v = \frac{-3}{5}$, and u and v are in quadrant II. Determine $\cos u$ and $\sin v$ first.

65) $\sin(u + v)$

66) $\cos(u + v)$

67) $\cos(v - u)$

Given the following function and location of angle A , find the exact value of $\sin(2A)$, $\cos(2A)$, and $\tan(2A)$. Determine the missing $\sin A$ or $\cos A$ first in each problem.

68) $\sin A = \frac{3}{5}$, Quadrant II

69) $\cos A = \frac{-\sqrt{6}}{3}$, Quadrant III

70) $\sin A = \frac{-15}{17}$, Quadrant IV