

- How many radians are there in 2 revolutions of a circle.
- The point $(-7,5)$ is on the terminal side of an angle in standard position. Determine the exact values of the six trigonometric functions of the angle.

3) Use the value of the trigonometric function, $\sin t = \frac{3}{5}$ to evaluate the indicated functions:

a) $\sin(-t)$ b) $\csc(-t)$

4) Convert -280° to radians in terms of π .

5) Convert $\frac{5\pi}{12}$ to degrees.

6) Given $\sin \theta = -\frac{2}{7}$ and $\pi \leq \theta \leq \frac{3\pi}{2}$, find $\cos \theta$.

For #7-12 Evaluate the given trigonometric functions without the use of a calculator:

7) $\sin \frac{7\pi}{6}$ 8) $\cos \frac{2\pi}{3}$ 9) $\sin(-120^\circ)$ 10) $\tan(-315^\circ)$ 11) $\sec -\frac{5\pi}{3}$ 12) $\csc -\frac{5\pi}{6}$

13) Find the $\tan \theta$, if $\sec \theta = \frac{13}{5}$ and θ is in the fourth quadrant.

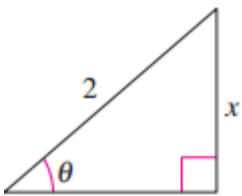
14) $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right)$ 15) $\cos^{-1}\left(\frac{-1}{2}\right)$ 16) $\tan^{-1}(-\sqrt{3})$ 17) $\csc\left(\tan^{-1}\left(\frac{-4}{3}\right)\right)$

Find one positive and one negative coterminal angle, given:

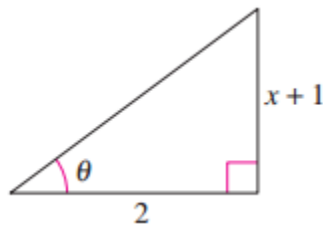
18) $\frac{11\pi}{4}$ 19) -405° 20) $\frac{2\pi}{9}$ 21) 515°

22) Find the length of the third side of the triangle in terms of x . Then find θ in terms of x for all three inverse trigonometric functions.

a)



b)



23) Write an algebraic expression that is equivalent to the expression : $\sec[\arcsin(x-1)]$

24) Write an algebraic expression that is equivalent to the expression : $\sin(\tan^{-1}x)$

25) Find the exact value of : $\sin[\tan^{-1}(-\frac{2}{7})]$

Graph the Following. State the domain and range in

26) $y = 3\cos(4x - 2\pi) + 2$ (interval notation)

27) $y = -5\sin\left(3x + \frac{\pi}{2}\right) + 1$ (interval notation)

28) $y = -2\tan\frac{\pi x}{2}$ (set notation)

29) **Calculator:** An antenna stands at the top of a tall building. From a point 125 feet away from the base of the building, the angle of elevation to the top and bottom of the antenna are 70° and 67° , respectively. How tall is the antenna? Round to three decimal places.

30) **Calculator:** The 14 inch diameter circular blade on a saw rotates at 2400 revolutions per minute.

- Find the angular speed in radians per second. Exact value (in terms of π).
- Find the linear speed of the blade tip in feet per second, rounded to the nearest thousandth.

31) The radius of a compact disc is 6 cm. Find the linear speed of a point on the circumference of the disc if it is rotating at a speed of 500 revolutions per minute. Exact value (in terms of π).

32) Find the radian measure of the central angle of a circle with a radius of 12 feet that intercepts an arc of length 48 feet.

True or False:

33) $\cos(-x) = \cos x$

34) $\sec\left(\frac{\pi}{2} - \theta\right) = \cos \theta$

35) If $\sin t = 0.7$, then $\sin(-t) = -0.7$

Simplify:

36) $\csc x \tan x$

37) $\frac{\cot x + \tan x}{\cot x}$

38) **Calculator:** Evaluate each to three decimal places:

a) $\cos 84^\circ$

b) $\cot \frac{3\pi}{20}$

c) $\cot^{-1}(6.5)$

d) $\operatorname{arcsec}(-1.89)$

Additional practice problems can be found in your textbook at the end of chapter 4 on pages 615-619.

Pre-Calculus CH4 Review Answers:

1. 4π

2. $\sin \theta = \frac{5\sqrt{74}}{74}$ $\cos \theta = -\frac{7\sqrt{74}}{74}$ $\tan \theta = -\frac{5}{7}$

$\csc \theta = \frac{\sqrt{74}}{5}$ $\sec \theta = -\frac{\sqrt{74}}{7}$ $\cot \theta = -\frac{7}{5}$

3. a) $-\frac{3}{5}$ b) $-\frac{5}{3}$

4. $-\frac{14\pi}{9}$

5. 75°

6. $\cos \theta = -\frac{3\sqrt{5}}{7}$

7. $-\frac{1}{2}$

8. $-\frac{1}{2}$

9. $-\frac{\sqrt{3}}{2}$

10. 1

11. 2

12. -2

13. $\tan \theta = -\frac{12}{5}$

14. $-\frac{\pi}{3}$

15. $\frac{2\pi}{3}$

16. $-\frac{\pi}{3}$

17. $-\frac{5}{4}$

18. $\frac{3\pi}{4}$ and $-\frac{5\pi}{4}$

19. 315° and -45°

20. $\frac{20\pi}{9}$ and $-\frac{16\pi}{9}$

21. 155° and -205°

22. a)

$$\sqrt{4-x^2}; \theta = \arcsin \frac{x}{2}, \theta = \arccos \frac{\sqrt{4-x^2}}{2},$$

$$\theta = \arctan \frac{x}{\sqrt{4-x^2}}$$

b)

$$\sqrt{x^2+2x+5}; \theta = \arcsin \frac{x+1}{\sqrt{x^2+2x+5}},$$

$$\theta = \arccos \frac{2}{\sqrt{x^2+2x+5}}, \theta = \arctan \frac{x+1}{2}$$

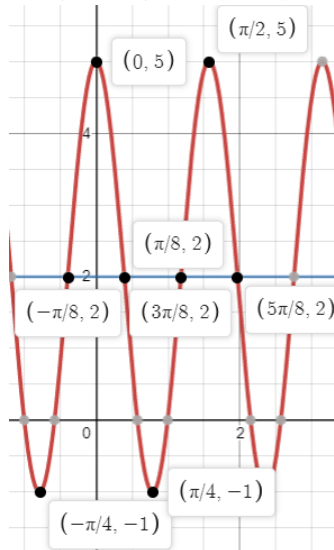
23. $\frac{\sqrt{2x-x^2}}{2x-x^2}$

24. $\frac{x\sqrt{x^2+1}}{x^2+1}$

25. $-\frac{2\sqrt{53}}{53}$

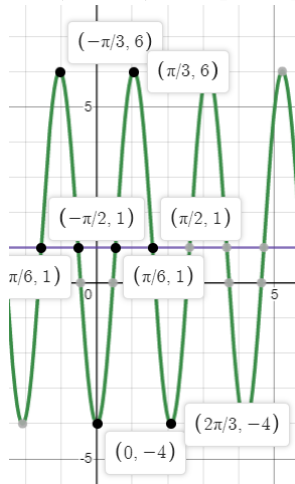
26. $y = 3\cos(4x - 2\pi) + 2$ Amplitude: 3 New Axis: $y = 2$ Period: $\frac{\pi}{2}$ Increment: $\frac{\pi}{8}$ PS: $\frac{\pi}{2}$

D: $(-\infty, \infty)$ R: $[-1, 5]$

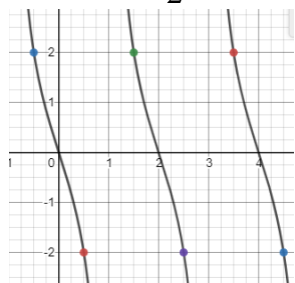


27. $y = -5\sin\left(3x + \frac{\pi}{2}\right) + 1$ Amplitude: 5 New Axis: $y = 1$ Period: $\frac{2\pi}{3}$ Increment: $\frac{\pi}{6}$ PS: $-\frac{\pi}{6}$

D: $(-\infty, \infty)$ R: $[-4, 6]$



28. $y = -2\tan\frac{\pi x}{2}$ Period: 2 D: $\{x|x \neq 1 + 2n, n \in \mathbb{Z}\}$ R: $\{y|y \in \mathbb{R}\}$



29. 48.953 feet
30. a) 80π rad/sec b) 146.608 ft/sec
31. 6000π cm/min
32. 4 radians
33. True
34. False
35. True
36. $\sec x$
37. $\sec^2 x$
38. a) 0.105 b) 1.963 c) 0.153 radians or 8.746° d) 2.128 radians or 121.945°