

## Chapter 13 Review Worksheet

Name: \_\_\_\_\_

**NO CALCULATOR, NO UNIT CIRCLE**

Evaluate the trigonometric function. Give an exact answer.

1.)  $\csc \frac{\pi}{6}$

2.)  $\sec \frac{\pi}{3}$

3.)  $\cos \frac{\pi}{4}$

4.)  $\sin \frac{\pi}{3}$

5.)  $\cot \frac{\pi}{4}$

6.)  $\tan \frac{\pi}{6}$

Evaluate the six trigonometric functions of  $\theta$ .

7.)  $\theta = 360^\circ$

8.)  $\theta = -\frac{3\pi}{2}$

**NO CALCULATOR, MAY USE UNIT CIRCLE**

Evaluate the function without using a calculator (i.e. ALL ANSWERS SHOULD BE EXACT, NO DECIMALS).

9.)  $\tan 330^\circ$

10.)  $\csc(-405^\circ)$

11.)  $\tan 150^\circ$

12.)  $\sec(-480^\circ)$

13.)  $\sin \frac{13\pi}{6}$

14.)  $\sec \frac{11\pi}{3}$

15.)  $\cos^{-1} 1$

16.)  $\tan^{-1} \sqrt{3}$

17.)  $\sin^{-1} \left(-\frac{\sqrt{2}}{2}\right)$

18.)  $\cos^{-1} \left(-\frac{\sqrt{3}}{2}\right)$

19.)  $\sin^{-1} 0$

20.)  $\cos^{-1} 3$

21.)  $\tan^{-1} 1$

22.)  $\sin^{-1} \left(-\frac{1}{2}\right)$

**MAY USE CALCULATOR, MAY USE UNIT CIRCLE AND FORMULAS**

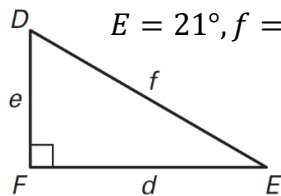
23.) In  $\triangle ABC$ ,  $a = 4$ ,  $b = 5$ , and  $C = 90^\circ$ . Evaluate the six trigonometric functions of angle  $B$ .

Let  $\theta$  be an acute angle of a right triangle. Find the values of the other five trigonometric functions of  $\theta$ .

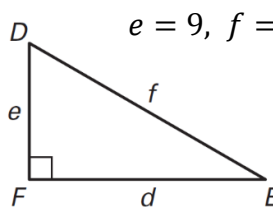
24.)  $\sec \theta = 2$

Solve  $\triangle ABC$  using the diagram and the given measurements. Round answers to the nearest tenth, when necessary.

25.)  $E = 21^\circ, f = 8$



26.)  $e = 9, f = 17$

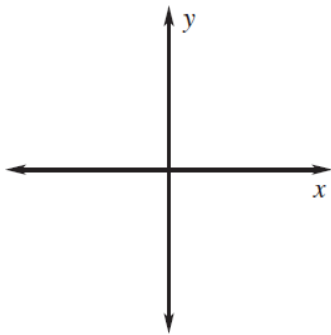


27.) You are standing 50 meters from a hot air balloon that is preparing to take off. The angle of elevation to the top of the balloon is  $28^\circ$ . Find the height of the balloon.

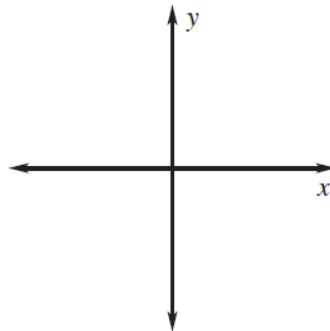
28.) You use a 12 foot ramp to load items into a van. If the floor of the van is 4 feet off the ground, what is the angle of elevation of the ramp?

**Sketch the angle. Then find its reference angle. Answer in the unit of the given angle.**

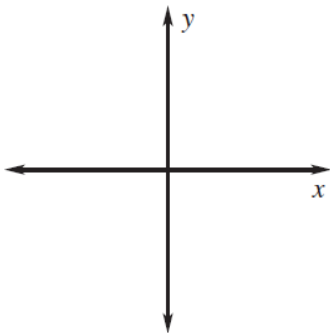
29.)  $250^\circ$



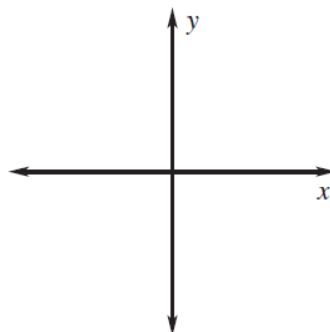
30.)  $-30^\circ$



31.)  $\frac{8\pi}{3}$



32.)  $-\frac{11\pi}{6}$



Find one positive angle and one negative angle that are coterminal with the given angle.

33.)  $155^\circ$

34.)  $-325^\circ$

35.)  $\frac{11\pi}{5}$

36.)  $\frac{15\pi}{7}$

Convert the degree measure to radians or the radian measure to degrees.

37.)  $145^\circ$

38.)  $-80^\circ$

39.)  $\frac{4\pi}{9}$

40.)  $-\frac{17\pi}{10}$

Use your calculator to evaluate the trigonometric functions. Round your answers to the nearest tenth.

41.)  $\cot 215^\circ$

42.)  $\cos \frac{\pi}{8}$

43.)  $\sec \frac{\pi}{10}$

Find the arc length and area of a sector with the given radius  $r$  and central angle  $\theta$ . Round answers to the nearest hundredth.

44.)  $r = 5$  ft,  $\theta = 90^\circ$

45.)  $r = 2$  in.,  $\theta = 300^\circ$

Use the given point on the terminal side of an angle  $\theta$  in standard position to evaluate the six trigonometric functions of  $\theta$ .

46.)  $(-9, 12)$

- 47.) You and a friend are driving golf balls at a driving range. Your drive has an angle of elevation of  $37^\circ$  with an initial velocity of 140 feet per second. Your friend's drive has an angle of elevation of  $45^\circ$  and an initial velocity of 135 feet per second. Which ball travels the farthest and by how much?

**Solve the equation for  $\theta$ .**

48.)  $\sin \theta = 0.27$ ;  $90^\circ < \theta < 180^\circ$

49.)  $\tan \theta = 0.42$ ;  $180^\circ < \theta < 270^\circ$

50.)  $\tan \theta = -2.5$ ;  $270^\circ < \theta < 360^\circ$

51.)  $\cos \theta = -0.65$ ;  $180^\circ < \theta < 270^\circ$

**Solve  $\triangle ABC$ . Round answers to the nearest tenth.**

52.)  $A = 34^\circ$ ,  $a = 6$ ,  $b = 7$

53.)  $a = 16$ ,  $b = 23$ ,  $c = 17$

54.)  $A = 50^\circ$ ,  $C = 65^\circ$ ,  $b = 60$

55.)  $B = 63^\circ$ ,  $a = 11$ ,  $b = 8$

56.)  $C = 50^\circ$ ,  $a = 12$ ,  $b = 14$

57.)  $B = 86^\circ$ ,  $b = 13$ ,  $c = 11$

Find the area of  $\triangle ABC$ . Round answers to the nearest tenth.

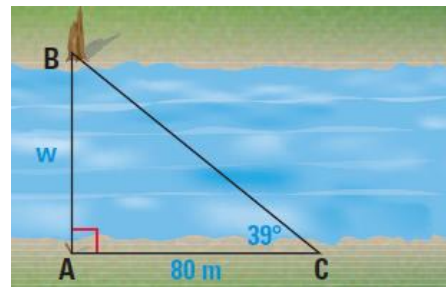
58.)  $A = 81^\circ$ ,  $b = 16$ ,  $c = 18$

59.)  $a = 8$ ,  $b = 6$ ,  $c = 7$

60.)  $C = 111^\circ$ ,  $a = 7$ ,  $b = 13$

61.)  $a = 16$ ,  $b = 33$ ,  $c = 24$

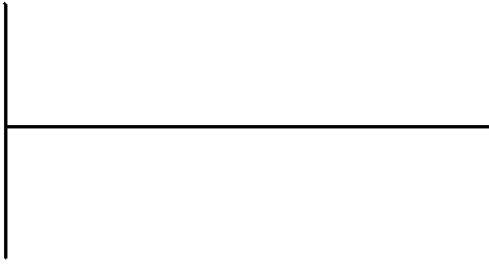
- 62.) To measure the width of a river, you plant a stake at point  $A$  on one side of the riverbank, directly across from a tree stump at point  $B$  on the other side of the riverbank. From point  $A$ , you walk 80 meters along the riverbank to point  $C$ . You find the measure of angle  $C$  to be  $39^\circ$ . What is the width  $w$  of the river?



- 63.) A crane has a 200 foot arm with a lower end that is 5 feet off the ground. The arm has to reach to the top of a building that is 160 feet high. At what angle  $\theta$  should the arm be set?

Graph one period of the function. Identify its domain, range, amplitude, period, and x-/y-intercepts.

64.)  $y = 4 \sin 2x$



domain:

range:

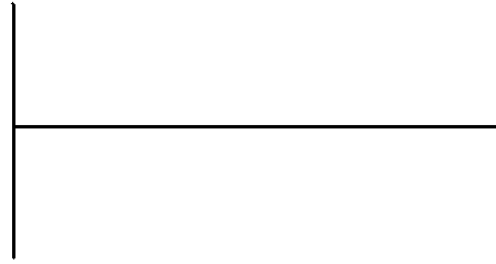
amplitude:

period:

x-int:

y-int:

65.)  $y = 5 \cos \frac{1}{4}\pi x$



domain:

range:

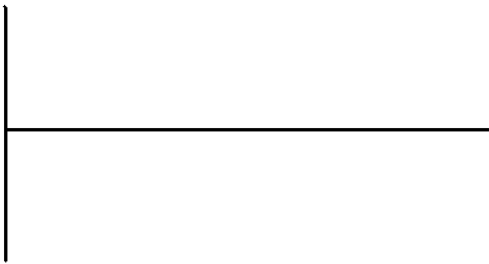
amplitude:

period:

x-int:

y-int:

66.)  $y = 3 \cos \frac{2}{3}x$



domain:

range:

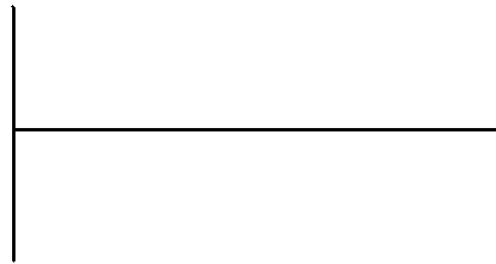
amplitude:

period:

x-int:

y-int:

67.)  $y = 2 \sin 8x$



domain:

range:

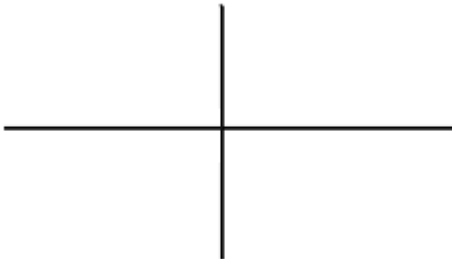
amplitude:

period:

x-int:

y-int:

68.)  $y = 2 \tan 2x$



domain:

range:

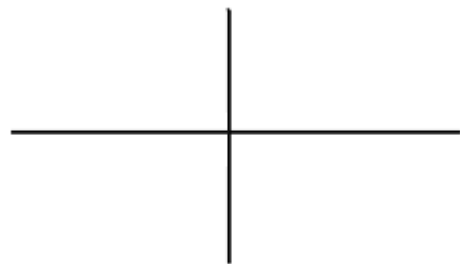
asymptotes:

period:

x-int:

y-int:

69.)  $y = 3 \tan \frac{1}{3}\pi x$



domain:

range:

asymptotes:

period:

x-int:

y-int: