MAC 1114 Review for Exam 2

Name_____

Convert the angle to radians. Leave as a multiple of π.

    1) 36°   1) _____

    2) 510°   2) _____

Convert the degree measure to radians, correct to four decimal places. Use 3.1416 for π.

    3) 303°19′   3) _____

    4) 20.03°   4) _____

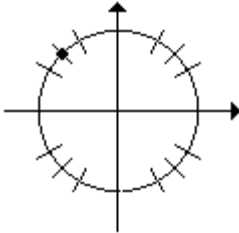**Convert the radian measure to degrees. Give answer using decimal degrees to the nearest tenth.**

    5) –1.8   5) _____

Find two real numbers between –2π and 2π that determine the point on the unit circle.

    6)   6) _____

Find the measures of two angles, one positive and one negative, that are coterminal with the given angle.

    7) $\dfrac{6\pi}{5}$ 7) _____

Find the supplement or complement.

    8) Supplement of $\dfrac{\pi}{12}$ 8) _____

    9) Complement of $\dfrac{\pi}{3}$ 9) _____

Find the exact value for the expression.

    10) $\sin \dfrac{5\pi}{3}$ 10) _____

    11) $\cos\left(-\dfrac{5\pi}{4}\right)$ 11) _____

    12) $\tan\left(-\dfrac{2\pi}{3}\right)$ 12) _____

1

Find the function value using a calculator set in RADIAN mode. Round the answer to four decimal places, where approximate.

13) $\sin \dfrac{6\pi}{7}$

13) _____

14) $\cos 4.08$

14) _____

15) $\tan 2.52$

15) _____

Complete the table. Round answers to two decimal places.

16)

Distance, s (arc length)	Radius, r	Angle, θ
13 yd	2 yd	_____

16) _____

17)

Distance, s (arc length)	Radius, r	Angle, θ
8 ft	_____	35 °

17) _____

Find the length of an arc intercepted by a central angle θ in a circle of radius r. Round your answer to 1 decimal place.

18) $r = 12.76$ cm.; $\theta = \dfrac{8}{7}\pi$ radians

18) _____

19) $r = 16.04$ in.; $\theta = 152°$

19) _____

Determine the measure of the central angle (in radians) given the length of the intercepted arc and the radius. Round answer to 4 decimal places if necessary.

20) Radius = 39 ft; Arc length = 126.11 ft

20) _____

Solve the problem.

21) A bicycle with a 28–inch wheel (diameter) travels a distance of 1100 feet. How many revolutions does the wheel make (to the nearest revolution)?

21) _____

22) A car wheel has a 13–inch radius. Through what angle (to the nearest tenth of a degree) does the wheel turn when the car rolls forward 4 ft?

22) _____

23) A wheel with a 26–inch radius is marked at two points on the rim. The distance between the marks along the wheel is found to be 19 inches. What is the angle (to the nearest tenth of a degree) between the radii to the two marks?

23) _____

24) A wheel with a 19–inch diameter is turning at the rate of 49 revolutions per minute. To the nearest inch, what is the speed of a point on the rim in in./min?

24) _____

Solve.

25) A wheel is rotating at 3 radians/sec, and the wheel has a 39–inch diameter. To the nearest foot per minute, what is the linear speed of a point on the rim?

25) _____

Solve the problem.

26) Each tire of an automobile has a radius of 1.5 feet. How many revolutions per minute (rpm) does a tire make when the automobile is traveling at a speed of 73 feet/sec? Round your answer to the nearest tenth.

26) _____

27) Two wheels are rotating in such a way that the rotation of the smaller wheel causes the larger wheel to rotate. The radius of the smaller wheel is 4.6 centimeters and the radius of the larger wheel is 19.3 centimeters. Through how many degrees will the larger wheel rotate if the smaller one rotates 120°?

27) _____

Find the exact value of s in the given interval that has the given circular function value.

28) $\left[\dfrac{3\pi}{2}, 2\pi\right]$; $\tan s = -\dfrac{\sqrt{3}}{3}$

28) _____

29) $\left[\dfrac{\pi}{2}, \pi\right]$; $\cos s = -\dfrac{\sqrt{3}}{2}$

29) _____

Answer the question.

30) The numbers θ and $-\theta$ determine the points A and B, respectively, on the unit circle. How are the points A and B related?

30) _____

31) The numbers θ and $\pi + \theta$ determine the points A and B, respectively, on the unit circle. How are the points A and B related?

31) _____

Graph each using translations or reflections.

32) $y = -\sin(-x)$

32) _____

3
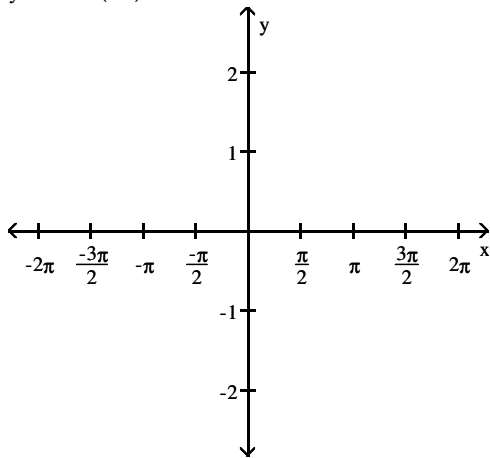
33) $y = -\cos(-x)$

33) _____

34) $y = \tan(-x)$

34) _____

35) $y = \sin\left(x + \dfrac{\pi}{2}\right)$

35) _____

4
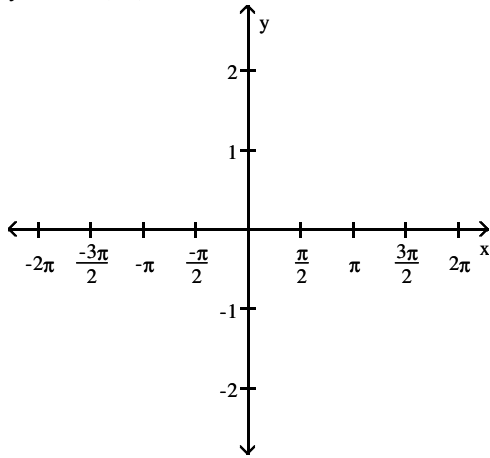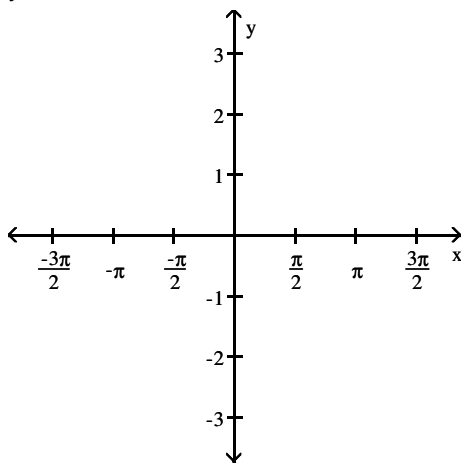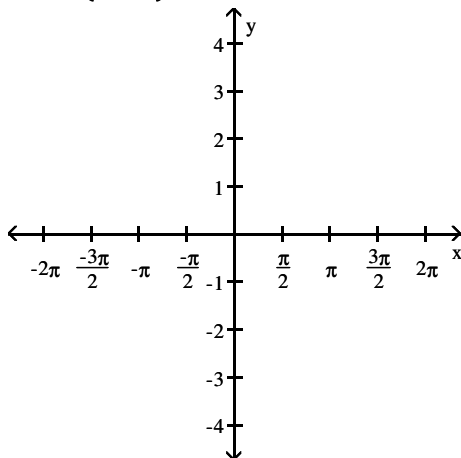
36) $y = \cos\left(x + \pi\right)$
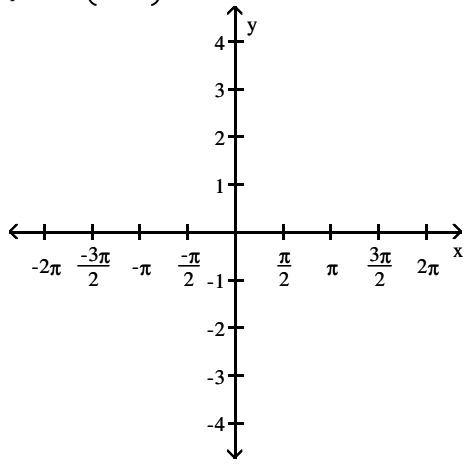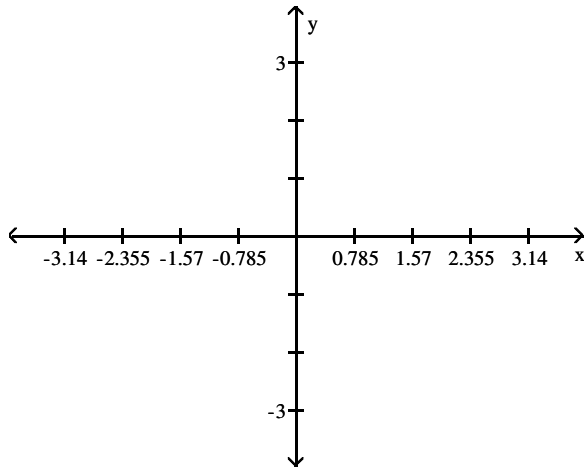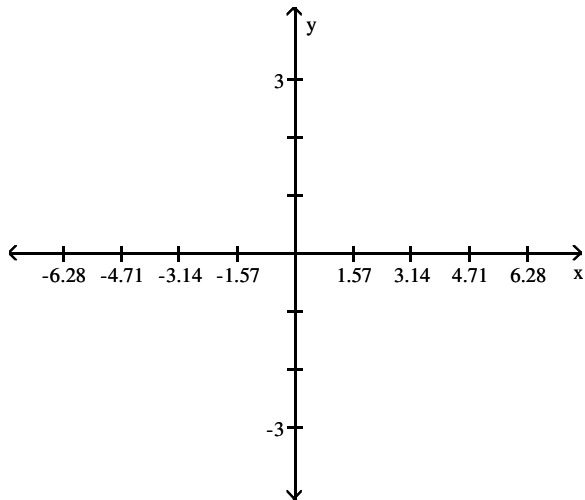
36) _____

Graph the function on the indicated interval.

37) $y = \sin 2x$. Graph on $[-\pi, \pi]$
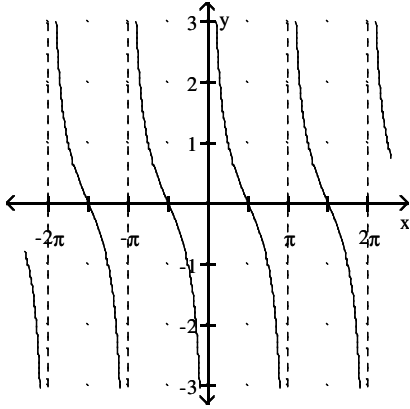
37) _____

38) $y = 3 \cos x$. Graph on $[-2\pi, 2\pi]$
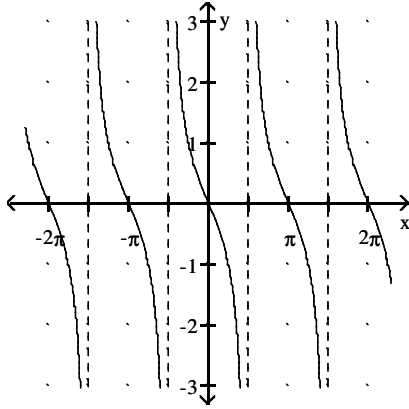
38) _____

Match the function with its graph.

39) 1) y = tan x   2) y = cot x
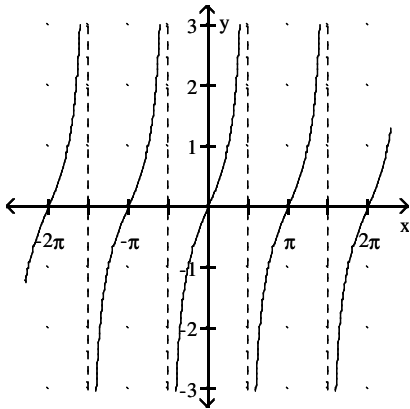
    3) y = –tan x   4) y = –cot x

39) _____

A)

B)

C)

D)
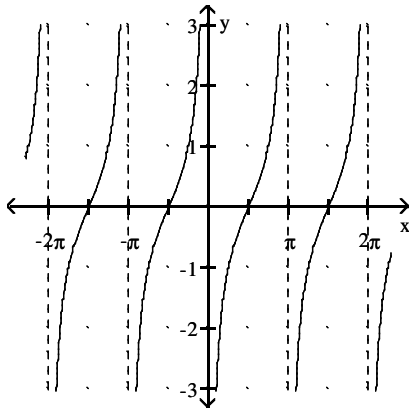
A) 1A, 2B, 3C, 4D   B) 1C, 2A, 3B, 4D   C) 1A, 2D, 3C, 4B   D) 1B, 2D, 3C, 4A

40) 1) y = sec x   2) y = csc x
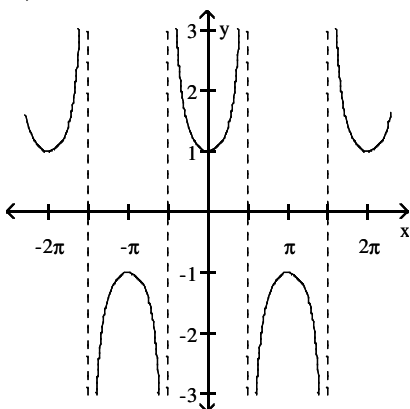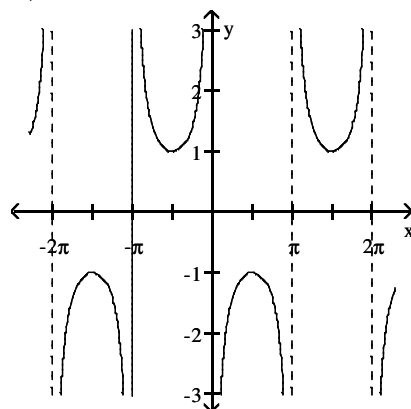3) y = –sec x   4) y = –csc x

A)
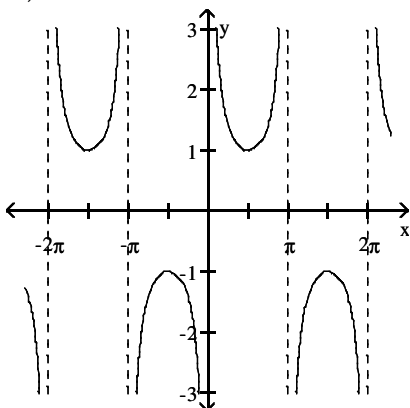
B)
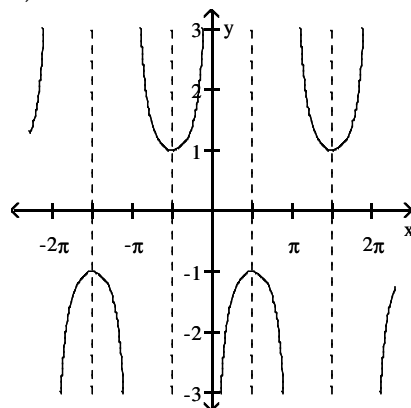
C)

D)

A) 1A, 2D, 3C, 4B   B) 1C, 2A, 3B, 4D   C) 1B, 2D, 3C, 4A   D) 1A, 2B, 3C, 4D

41) Find the amplitude, the period, the phase shift and give the equation of the center line for the following trigonometric function.

$$y = 3 \sin\left(5x - \frac{\pi}{4}\right) - 2$$

41) _____

Find the amplitude, period and phase shift and the equation of the center line.

42) Find the period of $y = -4 \cos\left(3x + \frac{\pi}{2}\right) + 5$.

42) _____

Solve the problem.

43) Suppose that the average monthly low temperatures for a small town are shown in the table.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temperature (°F)	19	27	38	45	57	62	65	58	51	41	33	25

Model this data using $f(x) = a \sin(b(x - c)) + d$.

43) _____

7

1) $\dfrac{\pi}{5}$

2) $\dfrac{17\pi}{6}$

3) 5.2939

4) 0.3496

5) –103.13°

6) $\dfrac{3\pi}{4}, \dfrac{-5\pi}{4}$

7) $\dfrac{16\pi}{5}; -\dfrac{4\pi}{5}$

8) $\dfrac{11\pi}{12}$

9) $\dfrac{\pi}{6}$

10) $-\dfrac{\sqrt{3}}{2}$

11) $-\dfrac{\sqrt{2}}{2}$

12) $\sqrt{3}$

13) 0.4339

14) –0.5911

15) –0.7163

16) 6.50

17) 13.10 ft

18) 45.8 cm

19) 42.6 in.

20) 3.2336 radians

21) 150 revolutions

22) 211.6°

23) 41.9°

24) 2925 in./min

25) 293 ft/min

26) 464.7 rpm

27) 28.60°

28) $s = \dfrac{11\pi}{6}$

29) $s = \dfrac{5\pi}{6}$

30) B is the reflection of A about the x–axis.
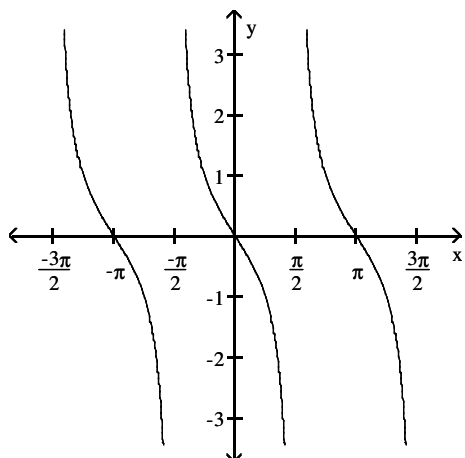
31) B is the reflection of A through the origin.
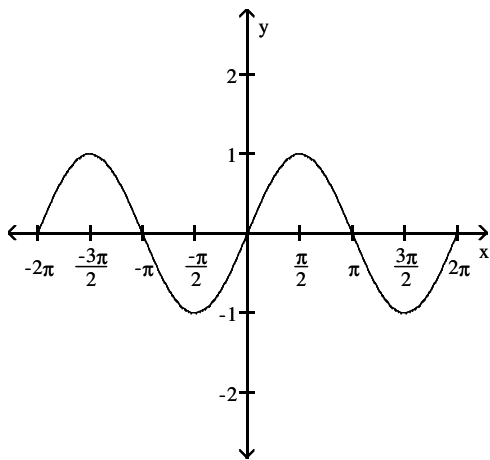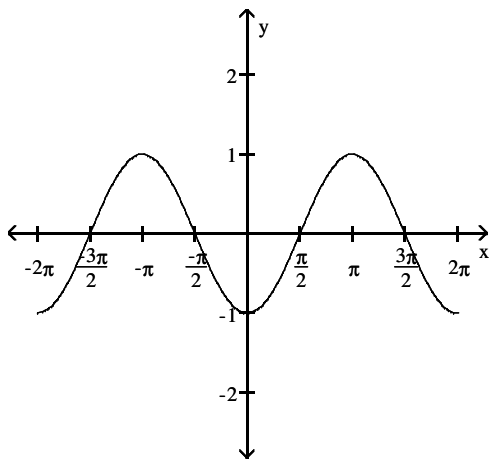
32)

33)

34)
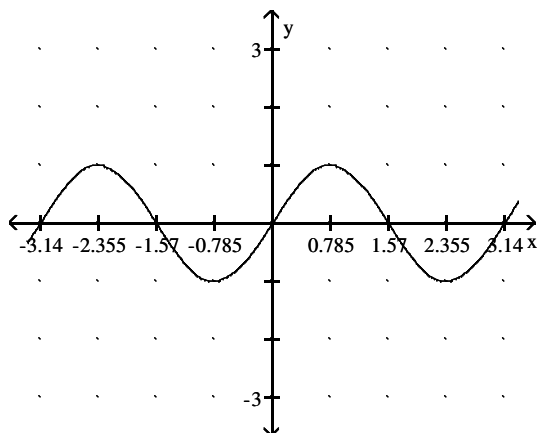
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36)
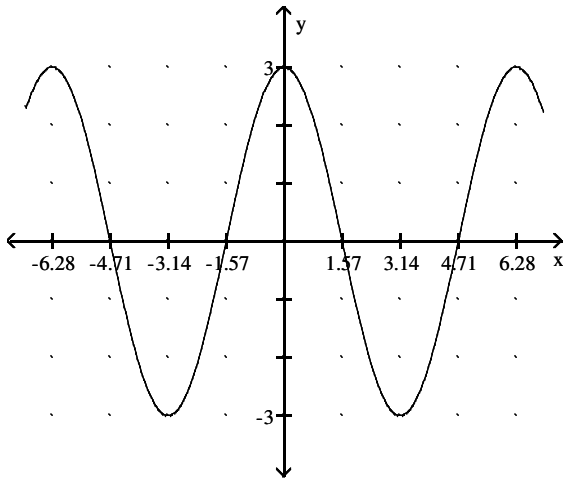

37)
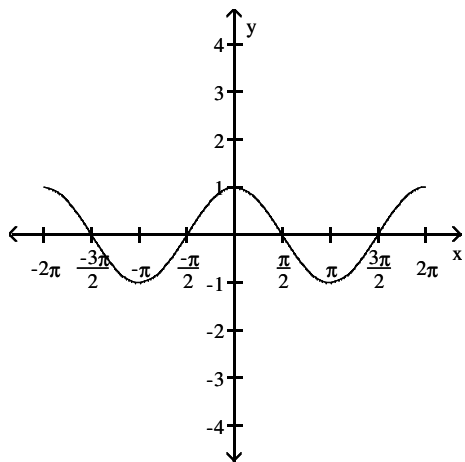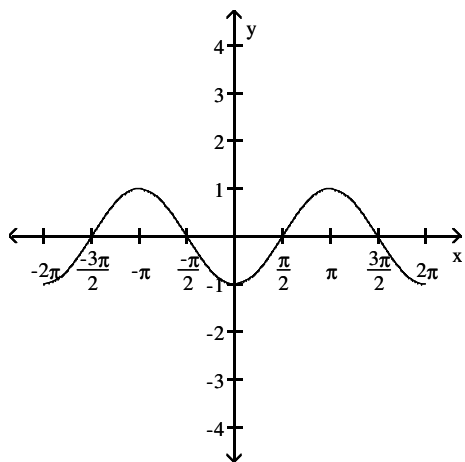
38)

39) B

40) B

41) amplitude: 3; period: $2\pi/5$; phase shift: $\pi/20$ units to the right; center line $y = -2$

42) Amplitude: $\left|-4\right| = 4$; Period $= \dfrac{2\pi}{3}$; Phase shift: $\dfrac{\pi}{6}$ units to the left; Equation of center line: $y = 5$.

43) $f(x) = 23 \sin\left[\dfrac{\pi}{6}(x - 4)\right] + 42$