Math 1316 - Practice Exam 2 - Spring 19

MULTIPLE CHOICE SECTION. (5 pts each) Choose the correct answer for each question. Select one choice only. No work will be graded. No partial credit.

Convert the radian measure to degrees. Round to the nearest hundredth if necessary.

1) $\frac{3\pi}{8}$ 1) _____

A) 135° B) 480π° C) 67.5° D) 120°

Assume that the cities lie on the same north–south line and that the radius of the earth is 6400 km.

2) Find the distance between City E, 35° N and City F, 44° S. (Round to the nearest kilometer.) 2) _____

A) 997 km B) 8832 km C) 8824 km D) 1005 km

Solve the problem.

3) Find the radius (to the nearest hundredth of a millimeter) of a pulley if rotating the pulley 109.38° raises the pulley 42.2 mm. 3) _____

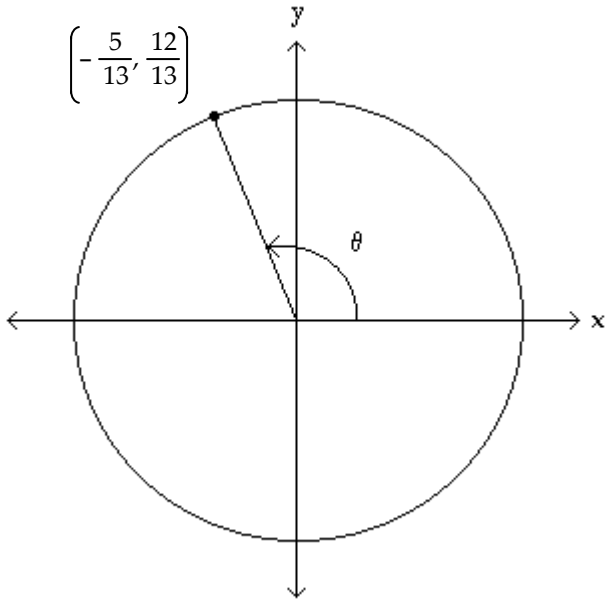
A) 21.91 mm B) 22.01 mm C) 22.21 mm D) 22.11 mm

4) Find the radius of a circle in which a central angle of $\frac{\pi}{3}$ radian determines a sector of area 93 square meters. Round to the nearest hundredth. 4) _____

A) 18.85 m B) 177.62 m C) 13.33 m D) 9.42 m

The figure shows an angle θ in standard position with its terminal side intersecting the unit circle. Evaluate the indicated circular function value of θ.

5) Find cot θ. 5) _____



A) $-\frac{5}{12}$ B) $-\frac{13}{12}$ C) $-\frac{12}{5}$ D) $\frac{12}{5}$

Use the formula v = rω to find the value of the missing variable. Give an exact answer unless otherwise indicated.

6) v = 218.9 m per sec, ω = 0.63361 radian per sec (Round to four decimal places when necessary.) 6) _____

A) 345.4807 m B) 69.6779 m C) 4.9583 m D) 0.0029 m

Solve the problem.

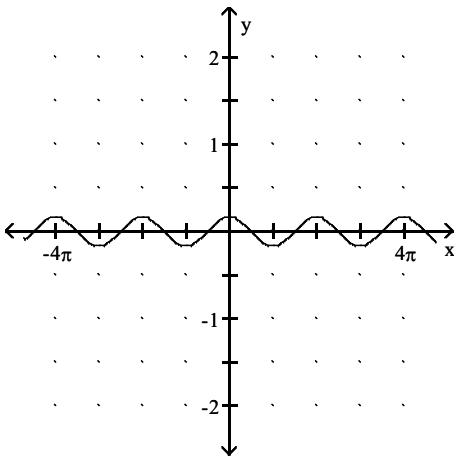
7) A wheel with a 21–inch diameter is turning at the rate of 44 revolutions per minute. To the nearest inch, what is the speed of a point on the rim in in./min? 7) _____

A) 2949 in./min B) 2903 in./min C) 2910 in./min D) 2956 in./min

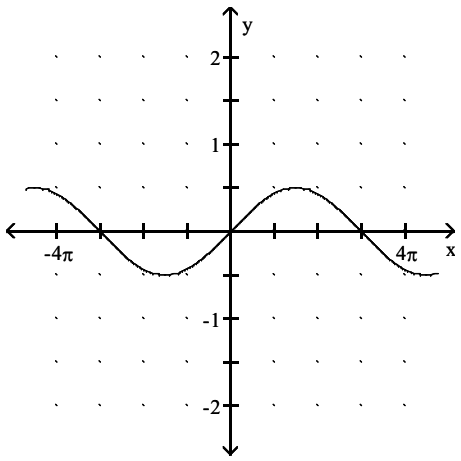
Graph the function.

8) $y = \frac{1}{2}\cos\frac{1}{3}x$ 8) _____

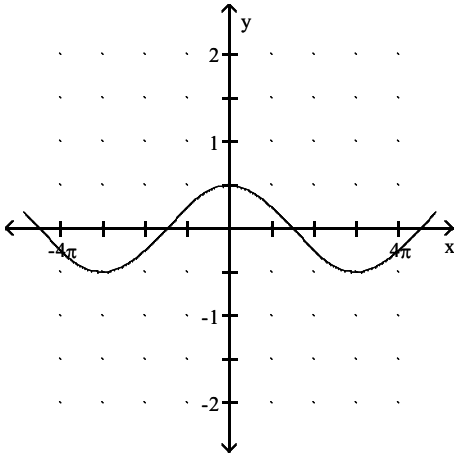
A)



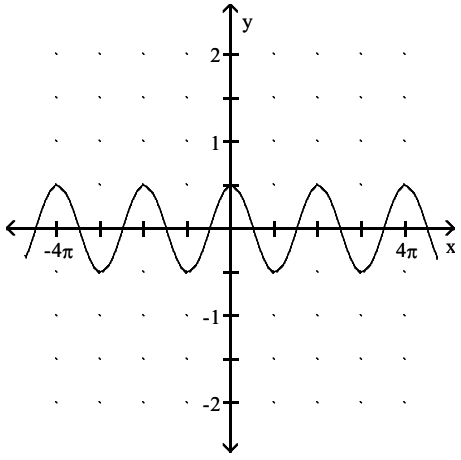
B)



C)

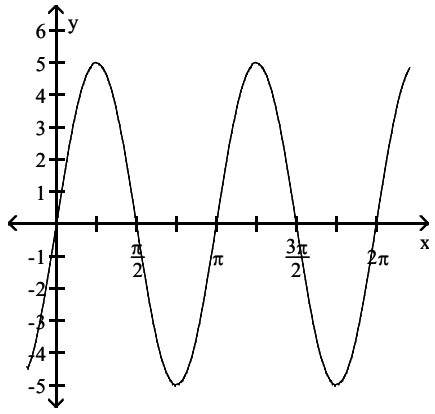


D)



The function graphed is of the form y = a sin bx or y = a cos bx, where b > 0. Determine the equation of the graph.

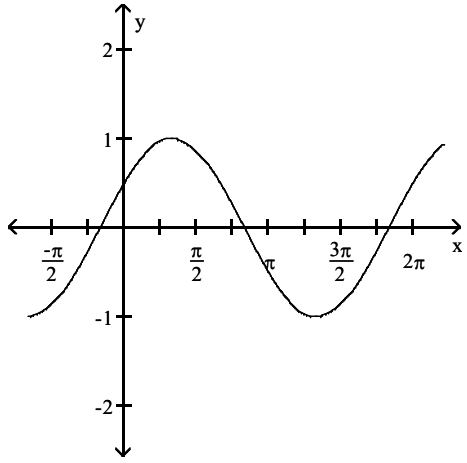
9) 9) _____



A) $y = 5 \sin (2x)$ B) $y = 5 \cos (2x)$ C) $y = 5 \sin\left(\frac{1}{2}x\right)$ D) $y = 2 \cos\left(\frac{1}{5}x\right)$

The function graphed is of the form y = cos x + c, y = sin x + c, y = cos(x – d), or y = sin(x – d), where d is the least possible positive value. Determine the equation of the graph.

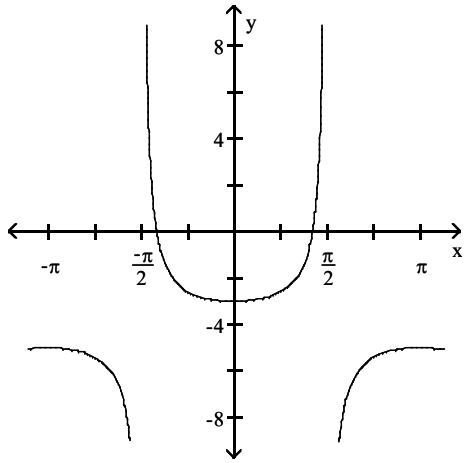
10) 10) _____



A) $\cos x - \frac{\pi}{3}$ B) $\sin\left(x - \frac{\pi}{3}\right)$ C) $\cos\left(x - \frac{\pi}{6}\right)$ D) $\cos\left(x - \frac{\pi}{3}\right)$

Determine the equation of the graph.

11) 11) _____



A) y = –4 + csc x B) y = –4 + sec x C) y = –4 – csc x D) y = –4 + sec 4x

Solve the problem.

12) The elk population in a certain region is given by the function $E(t) = 460 + 120\sin\left(\frac{2t}{5}\right)$, where the time t is measured in years. How much time elapses between occurrences of the largest and smallest elk population? 12) _____

A) ≈ 4 yr B) ≈ 16 yr C) ≈ 10 yr D) ≈ 8 yr

SHORT ANSWER SECTION. (5 pts each) Write the answer in the box. Write the FINAL ANSWER ONLY. No work will be graded. No partial credit.

Convert the degree measure to radians. Leave answer as a multiple of π.

13) 288° 13) _____

ANSWER ONLY:

Solve the problem.

14) A circular sector has an area of 18 in^2 and an arc length of 3 inches. What is the measure of the central angle in degrees? Round to the nearest degree. 14) _____

ANSWER ONLY:

Find the value of s in the interval [0, $\pi/2$] that makes the statement true. Round to four decimal places.

15) csc s = 1.1691 15) _____

ANSWER ONLY:

Find the exact values of s in the given interval that satisfy the given condition.

16) $[-\pi, \pi)$; $2\cos^2 s = 1$ 16) _____

ANSWER ONLY:

In the problem, s is a real number and P = (x, y) is the point on the unit circle that corresponds to s. Find the exact value of the indicated trigonometric function of s.

17) $(\frac{3}{7}, -\frac{2\sqrt{10}}{7})$ Find csc s. 17) _____

ANSWER ONLY:

Solve the problem.

18) A coil of wire rotating in a magnetic field induces a voltage given by 18) _____

$$e = 20 \sin\left(\frac{\pi t}{4} - \frac{\pi}{2}\right),$$

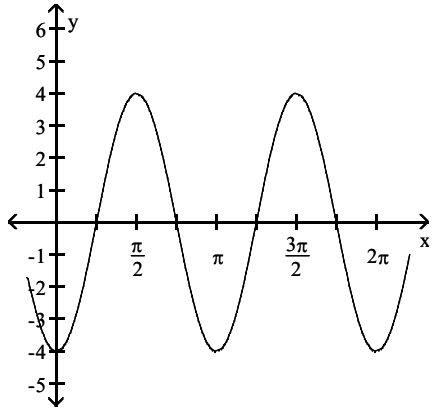
where t is time in seconds. Find the smallest positive time to produce a voltage of $10\sqrt{2}$.

ANSWER ONLY:

ESSAY. (5 pts each) Show all work to justify your answer. Answer with no work or insufficient work will receive no credit. Partial credit may be given.

The function graphed is of the form y = a sin bx or y = a cos bx, where b > 0. Determine the equation of the graph.

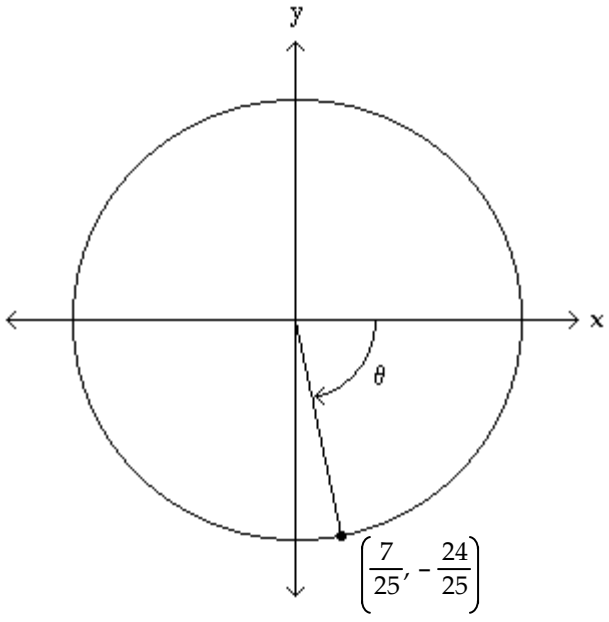
19)



SHOW ALL WORK

The figure shows an angle θ in standard position with its terminal side intersecting the unit circle.
Find all the 6 trigonometric functions value of θ, i.e, find sine, cosine, tangent, cotangent, secant, cosecant of the angle.

20)



1) C
2) C
3) D
4) C
5) A
6) A
7) B
8) C
9) A
10) D
11) B
12) D
13) $\frac{8\pi}{5}$
14) 14°
15) 1.0262
16) $-\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$
17) $-\frac{7\sqrt{10}}{20}$
18) 3 sec
19) $y = -4 \cos(2x)$
20) $\frac{7}{25}$