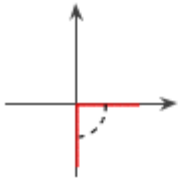
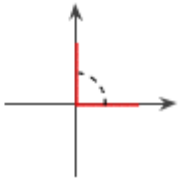
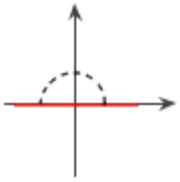
Student: _____	**Instructor:** Keith Barrs	**Assignment:** Sample Test 2
Date: _____	**Course:** Math 1113	
Time: _____	**Book:** Sullivan: Precalculus, 8e	

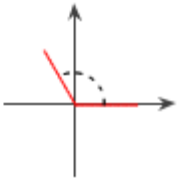
1. Choose the figure that shows an angle of $\frac{\pi}{2}$ radians in standard position.

Choose the correct answer below.

A. 

B. 

C. 

D. 

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2. Convert the angle to a decimal in degrees.

$8°8'8''$

$8°8'8'' = \square°$

(Do not round until the final answer. Then round to two decimal places as needed.)

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3. Convert the angle in degrees to radians.

$240°$

$240° = \square$ radian(s)

(Simplify your answer. Type an exact answer in terms of π.)

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4. Convert the angle in degrees to radians.

$-90°$

$-90° = \square$ radian(s)

(Simplify your answer. Type an exact answer in terms of π.)

5. Convert the angle in radians to degrees.

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

$-\frac{\pi}{3}$ radians = ☐° (Type a whole number.)

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6. Convert the angle in radians to degrees.

$\frac{\pi}{9}$

$\frac{\pi}{9}$ = ☐° (Simplify your answer.)

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7. s denotes the length of the arc of a circle of radius r subtended by the central angle θ. Find the missing quantity.

$\theta = \frac{1}{2}$ radian, s = 7 feet, r = ?

The radius r of the circle is ☐ feet. (Simplify your answer.)

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8. Find the length s of the arc of a circle of radius 70 inches subtended by the central angle 24°.

s (arc length) = ☐ inches (Round to three decimal places.)

9. The variable t is a real number and $P = \left(\frac{4\sqrt{5}}{9}, \frac{1}{9}\right)$ is the point on the unit circle that corresponds to t. Find the exact values of the six trigonometric functions of t.

$\sin t =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators.)

$\cos t =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators.)

$\tan t =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators.)

$\csc t =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators.)

$\sec t =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators.)

$\cot t =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators.)

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10. Find the exact value of $\cos(-\pi)$. Do not use a calculator.

$\cos(-\pi) =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators. Type N if the answer is undefined.)

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11. Find the exact value of the expression. Do not use a calculator.

$\sin 0° + \cot 45°$

$\sin 0° + \cot 45° =$ ☐
(Type an exact answer, using radicals as needed. Rationalize all denominators. Type N if the answer is undefined.)

12. Find the exact value of the expression. Do not use a calculator.

$$\sin\frac{\pi}{3} - \cos\frac{\pi}{6}$$

$\sin\frac{\pi}{3} - \cos\frac{\pi}{6} =$ ☐

(Simplify your answer. Type an exact answer, using radicals as needed. Rationalize all denominators. Use integers or fractions for any numbers in the expression.)

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13. Find the exact values of the six trigonometric functions of the given angle. If any are not defined, say "not defined." Do not use a calculator.

$$\frac{8\pi}{3}$$

Type the exact values of the six trigonometric functions of the given angle, starting with the sine. (Type integers or fully simplified fractions. Rationalize denominators.)

$\sin\frac{8\pi}{3} =$ ☐

$\cos\frac{8\pi}{3} =$ ☐

$\tan\frac{8\pi}{3} =$ ☐

$\cot\frac{8\pi}{3} =$ ☐

$\sec\frac{8\pi}{3} =$ ☐

$\csc\frac{8\pi}{3} =$ ☐

14. Find the exact values of the six trigonometric functions of the given angle. If any are not defined, say "not defined." Do not use a calculator.

510°

Type the exact values of the six trigonometric functions of the given angle, starting with the sine. (Type integers or fully simplified fractions. Rationalize denominators.)

sin 510° = ☐

cos 510° = ☐

tan 510° = ☐

cot 510° = ☐

sec 510° = ☐

csc 510° = ☐

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15. Use a calculator to find the approximate value of the expression. Round the answer to two decimal places.

tan 14°

tan 14° = ☐
(Round to two decimal places as needed.)

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16. Use a calculator to find the approximate value of the expression. Round the answer to two decimal places.

sin 1

sin 1 = ☐ (Round to two decimal places as needed.)

17. The point given below is on the terminal side of an angle θ. Find the exact values of the six trigonometric functions of θ.

$(7, -2)$

$\sin\theta =$ ☐ (Type a simplified fraction. Rationalize the denominator.)

$\cos\theta =$ ☐ (Type a simplified fraction. Rationalize the denominator.)

$\tan\theta =$ ☐ (Type a simplified fraction. Rationalize the denominator.)

$\cot\theta =$ ☐ (Type a simplified fraction. Rationalize the denominator.)

$\sec\theta =$ ☐ (Type a simplified fraction. Rationalize the denominator.)

$\csc\theta =$ ☐ (Type a simplified fraction. Rationalize the denominator.)

---

18. Use the fact that the trigonometric functions are periodic to find the exact value of the given expression. Do not use a calculator.

$\tan(390°)$

$\tan(390°) =$ ☐
(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)

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19. Use the fact that the trigonometric functions are periodic to find the exact value of the given expression. Do not use a calculator.

$\cos\frac{25\pi}{4}$

$\cos\frac{25\pi}{4} =$ ☐
(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)

20. Name the quadrant in which the angle θ lies.

$\cos\theta > 0, \quad \cot\theta < 0$

The angle θ lies in quadrant ☐. (If there is more than one quadrant, enter the smaller one first, and separate your answers with a comma. If there are no quadrants, enter N for none. Use Roman numerals to identify quadrants.)

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21. $\sin\theta$ and $\cos\theta$ are given. Find the exact value of each of the four remaining trigonometric functions.

$$\sin\theta = \frac{1}{16}, \quad \cos\theta = \frac{\sqrt{255}}{16}$$

$\csc\theta =$ ☐
(Type an exact answer, using radicals as needed. Simplify your answer. Rationalize all denominators.)

$\sec\theta =$ ☐
(Type an exact answer, using radicals as needed. Simplify your answer. Rationalize all denominators.)

$\tan\theta =$ ☐
(Type an exact answer, using radicals as needed. Simplify your answer. Rationalize all denominators.)

$\cot\theta =$ ☐
(Type an exact answer, using radicals as needed. Simplify your answer. Rationalize all denominators.)

22. Find the exact value of each of the remaining trigonometric functions of θ.

$\sin\theta = \frac{12}{13}, \quad 90° < \theta < 180°$

$\cos\theta =$ ☐
(Type a simplified fraction. Rationalize the denominator if necessary.)

$\tan\theta =$ ☐
(Type a simplified fraction. Rationalize the denominator if necessary.)

$\cot\theta =$ ☐
(Type a simplified fraction. Rationalize the denominator if necessary.)

$\sec\theta =$ ☐
(Type a simplified fraction. Rationalize the denominator if necessary.)

$\csc\theta =$ ☐
(Type a simplified fraction. Rationalize the denominator if necessary.)

23. Find the exact value of each of the remaining trigonometric functions of θ.

$\sec\theta = 5, \quad \sin\theta < 0$

$\sin\theta =$ ☐
(Type an exact answer, using radicals as needed. Rationalize the denominator if necessary.)

$\cos\theta =$ ☐
(Type an exact answer, using radicals as needed. Rationalize the denominator if necessary.)

$\tan\theta =$ ☐
(Type an exact answer, using radicals as needed. Rationalize the denominator if necessary.)

$\cot\theta =$ ☐
(Type an exact answer, using radicals as needed. Rationalize the denominator if necessary.)

$\csc\theta =$ ☐
(Type an exact answer, using radicals as needed. Rationalize the denominator if necessary.)

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24. Use the even-odd properties of the trigonometric functions to find the exact value of the given expression. Do not use a calculator.

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

$\cos\left(-\frac{\pi}{3}\right) =$ ☐
(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)

25. Use properties of the trigonometric functions to find the exact value of the expression. Do not use a calculator.

$\sin 26° \cdot \csc 26°$

$\sin 26° \cdot \csc 26° =$ ☐

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26. What is the domain of the cosecant function?

Choose the correct answer below.

- A. All real numbers except integral multiples of π $(180°)$
- B. All real numbers except integral multiples of $\frac{\pi}{2}$ $(90°)$
- C. All real numbers
- D. All real numbers except odd multiples of $\frac{\pi}{2}$ $(90°)$

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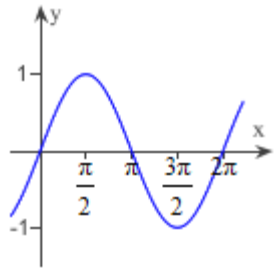
27. What is the range of the secant function?

Choose the correct answer below.

- A. All real numbers from -1 to 1, inclusive.
- B. All real numbers.
- C. All real numbers greater than or equal to 1 or less than or equal to -1.
- D. All real numbers greater than or equal to 0.

28. For what number x, $0 \le x \le 2\pi$, does $\sin x = -1$?



☐ ☐ ☐

(Pick from the following possible answers: 0, $\frac{\pi}{2}$, π, $\frac{3\pi}{2}$, 2π. Type all values, one per box, starting with the smallest value in the left box and working up. Enter N in any box without a value.)

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29. Determine the amplitude and period of the following function without graphing.

$y = -3\cos(4x)$

The amplitude is ☐.

The period is ☐.

(Simplify your answer. Type an exact answer in terms of π. Use integers or fractions for any numbers in the expression.)

---

30. Determine the amplitude and period of the following function without graphing.

$y = -\frac{5}{7}\sin\left(\frac{9}{7}x\right)$

For the function given, the amplitude is ☐.

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

For the function given, $\omega =$ ☐, so that the period $= T =$ ☐.

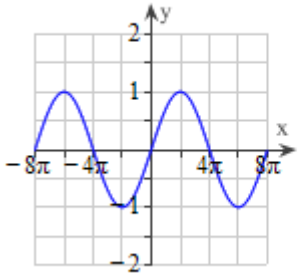
(Simplify your answer. Use integers or fractions for any numbers in the expression.)

31. Graph the following function. Show at least two cycles.

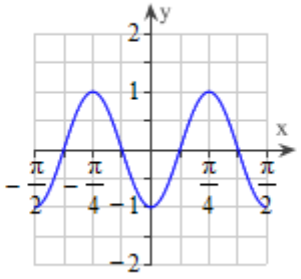
$y = \sin(4x)$

Choose the correct graph of the function below.

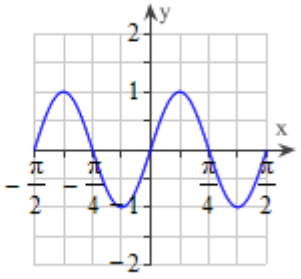
A.



B.



C.

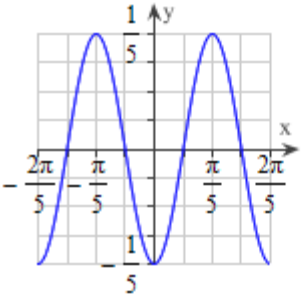


32. Graph the following function. Show at least two cycles.

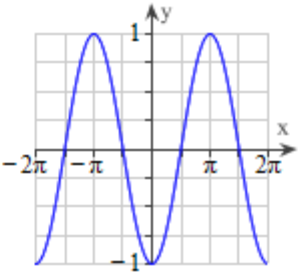
$y = -\frac{1}{5}\cos(5x)$

Choose the correct graph of the function below.

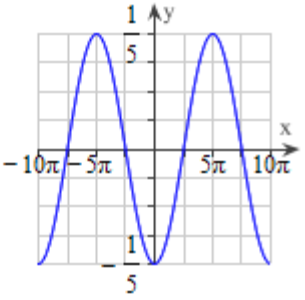
A.



B.



C.



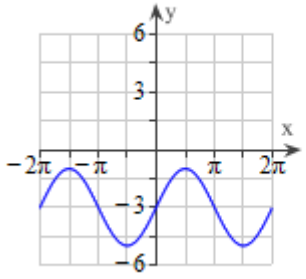
33.

Graph the following function. Show at least two cycles.

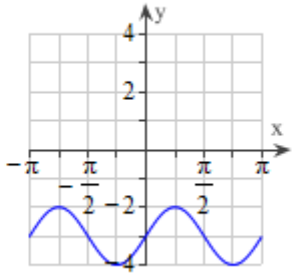
$y = 2 \sin x - 3$

Choose the correct graph of the function below.

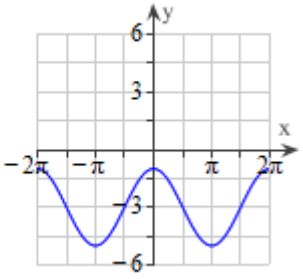
A.



B.



C.



Student: _____	**Instructor:** Keith Barrs	**Assignment:** Sample Test 2
Date: _____	**Course:** Math 1113	
Time: _____	**Book:** Sullivan: Precalculus, 8e	

1. B

2. 8.14

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

4. $-\frac{\pi}{2}$

5. -60

6. 20

7. 14

8. 29.322

9. $\frac{1}{9}$

$\frac{\frac{4\sqrt{5}}{9}}{\frac{\sqrt{5}}{20}}$

9

$\frac{9\sqrt{5}}{20}$

$4\sqrt{5}$

10. -1

11. 1

12. 0

13. $\frac{\sqrt{3}}{2}$
$-\frac{1}{2}$
$-\sqrt{3}$
$-\frac{\sqrt{3}}{3}$
-2
$\frac{2\sqrt{3}}{3}$

14. $\frac{1}{2}$
$-\frac{\sqrt{3}}{2}$
$-\frac{\sqrt{3}}{3}$
$-\sqrt{3}$
$-\frac{2\sqrt{3}}{3}$
2

15. 0.25

16. 0.84

17. $-\frac{2\sqrt{53}}{53}$
$\frac{7\sqrt{53}}{53}$
$-\frac{2}{7}$
$-\frac{7}{2}$
$\frac{\sqrt{53}}{7}$
$-\frac{\sqrt{53}}{2}$

18. $\frac{\sqrt{3}}{3}$

19. $\frac{\sqrt{2}}{2}$

20. IV

21. 16

$\frac{16\sqrt{255}}{255}$

$\frac{\sqrt{255}}{255}$

$\sqrt{255}$

22. $-\frac{5}{13}$

$-\frac{12}{5}$

$-\frac{5}{12}$

$-\frac{13}{5}$

$\frac{13}{12}$

23. $-\frac{2\sqrt{6}}{5}$

$\frac{1}{5}$

$-2\sqrt{6}$

$-\frac{\sqrt{6}}{12}$

$-\frac{5\sqrt{6}}{12}$

24. $\frac{1}{2}$

25. 1

26. A

27. C

28. $\frac{3\pi}{2}$
N
N

29. 3
$\frac{\pi}{2}$

30. $\frac{5}{7}$
$\frac{9}{7}$
$\frac{14\pi}{9}$

31. C

32. A

33. A