Math 131 Written Paper and Pencil Homework - SP 2020

Write your work on a separate sheet of paper. Show your work as in class.
Exact value/form means; fractions (and π where appropriate), no decimals.

Unit 1, Section 2.1

1. Draw each angle.

a) 540° b) $-\frac{2\pi}{3}$

2. Convert the angle in degrees to radians. Express answer in exact form. 270°

3. Convert the angle in radians to degrees. $-\frac{3\pi}{4}$

4. *s* denotes the length of the arc of a circle of radius *r* subtended by the central angle θ.
Given *r* = 3 meters, θ = 120°, find *s* = ?. Round your answer to 3 decimal places.

5. *A* denotes the area of the sector of a circle of radius *r* formed by the central angle θ.
Given *r* = 3 meters, θ = 120°, find *A* = ?. Round your answer to 3 decimal places.

6. The minute hand of a clock is 6 inches long. How far does the tip of the minute hand move in 15 minutes? How far does it move in 25 minutes? Round answers to two decimal places.

7. A water sprinkler sprays water over a distance of 30 feet while rotating through an angle of 135°. What area of lawn receives water?

Unit 1, Section 2.2

1. P = (x,y) is the point on the unit circle that corresponds to a real number *t*. Find the exact values of the six trigonometric functions of *t*. $\left(\frac{1}{5}, \frac{2\sqrt{6}}{5}\right)$

2. Find the exact value. Do not use a calculator. $3csc\frac{\pi}{3} + cot\frac{\pi}{4}$

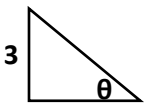
3. Find the exact value of the six trigonometric functions of the given angle. If it is *not defined*, say "*not defined*." Do not use a calculator. $-240°$

4. A point of the terminal side of an angle θ in standard position is given. Find the exact value of each of the six trigonometric functions of θ. (-1, -2)

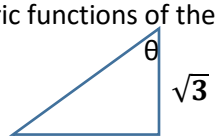
Unit 1, Section 4.1

1. Find the exact value of the six trigonometric functions of the angle θ in each figure.

a)



b)



2. Find the exact value of; *tan 12° - cot 78°*. Do not use a calculator.

Unit 1, Section 2.3

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

a) sec 420° b) $\cot\frac{17\pi}{4}$

2. Find the exact value of each of the four remaining trigonometric functions. Given $\sin\theta = \frac{\sqrt{3}}{2}, cos\theta = \frac{1}{2}$

3. Find the Exact value of each of the remaining trigonometric functions of θ. $cos\theta = -\frac{1}{4}, tan\theta > 0$

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

a) $\cot 20° - \frac{cos20°}{sin20°}$ b) $\frac{sin70°}{\cos(-430°)} + \tan(-70°)$

5. What is the range of the cosine function?

Unit 1, Section 2.4

1. Determine the amplitude and period of each function without graphing. $y = \frac{4}{3}\sin\left(\frac{2}{3}x\right)$

2. Graph each function using transformations or the method of key points. Be sure to label key points and show at least two cycles. Use the graph to determine the domain and the range of the function.

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

3. Graph each function using transformations or the method of key points. Be sure to label key points and show at least two cycles. Use the graph to determine the domain and the range of the function.

$y = \frac{9}{5}cos\left(-\frac{3\pi}{2}x\right)$

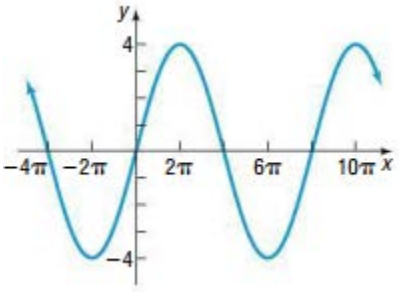
4. Write the equation of the sine function that has the given characteristics.

Amplitude: 2

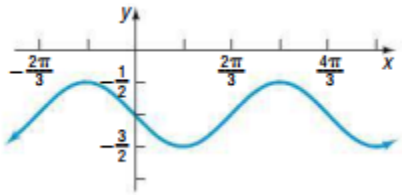
Period: 4π

5. Find the equation for the graph.

a)



b)



Unit 1, Section 2.5

1. Graph each function. Be sure to label key points and show at least two cycles. Use the graph to determine the domain and the range of the function.

$y = -3\cot x$

2. Graph each function. Be sure to label key points and show at least two cycles. Use the graph to determine the domain and the range of the function.

$y = tan\left(\frac{1}{2}x\right)$