

MAC 1114 Practice Test #2 Chapters 3-4. Lial

1. Convert  $55^\circ$  to radian angle. Your answer should be exact.

Answer:  $11\pi/36$

2. Convert the radian angle  $1/9$  to a degree measure. Your answer should be exact.

Answer:  $20/\pi^\circ$

3. Find (without using a calculator) the exact value of: (use the concepts found in the [Special Angles Radians](#) link in the Practice Problems in BB

a)  $\cot\left(\frac{5\pi}{2}\right)$  b)  $\sin\left(\frac{-7\pi}{6}\right)$  c)  $\tan\left(\frac{5\pi}{3}\right)$  Answer:  $0, 1/2, -\sqrt{3}$

4. Use a proportion to find how many radians there are if the two hands of the clock are at 12:20? Answer:  $11\pi/18$  rad

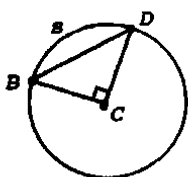
5. A small wheel (radius 5m.) and a large wheel (radius 8m.) rotate at the same time. Through how many degrees will the large wheel rotate if the smaller one rotates through  $160^\circ$ ? Answer:  $100^\circ$

6. An arc of length 2cm subtends an angle of  $\pi^\circ$ . Find the exact length of the radius of the circle. Answer:  $360/\pi^2$  cm.

7. Find the area of a sector with radius 6ft. and angle  $30^\circ$ .

Answer:  $3\pi$  ft<sup>2</sup>

8. In the circle below,  $C$  is the center of the circle, and  $\angle BCD$  is a right angle subtended by the arc  $s$  from  $B$  to  $D$ . If the straight-line distance from  $B$  to  $D$  is 4 meters, what is the length the arc  $s$ ?

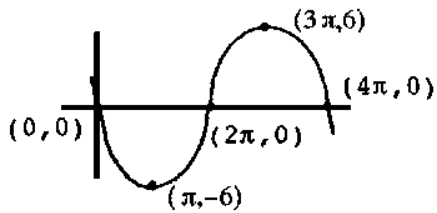


Answer:  $\sqrt{2}\pi$

9. Find the least positive value of  $x$  where the graph of  $y = 50\cos(6x)$  crosses the  $x$ -axis. Show the graph. Answer:  $\pi/12$

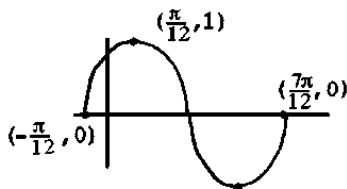
10. (No Calculator) Sketch the graph  $y = 3\cos\left(2x + \frac{\pi}{3}\right)$  for  $0 \leq x \leq 3\pi$ . Include all the coordinates of all maximum and minimum points. Label your asymptotes if any. Check your answer by graphing with a calculator.

11. The graph pictured below has an equation of the form  $y = a \sin (bx)$  find  $a$  and  $b$ .



Answer:  $a = -6$ ,  $b = 1/2$

12. The graph pictured below has an equation of the form  $y = a \cos (bx + c)$ . Find  $a$ ,  $b$  and  $c$ . You can check your answer with your calculator.



Answer:  $a = 1$ ,  $b = 3$ ,  $c = -\pi/4$ ;

13. (No Calculator) Sketch one period of the graph of  $y = \cot (\pi x - \frac{\pi}{4})$ . Label your intercepts and asymptotes. Check your answer by graphing with a calculator.

14. (No Calculator) Sketch one period of the graph of  $y = \cot (\pi x + \frac{\pi}{2})$ . Label your intercepts and asymptotes. Check your answer by graphing with a calculator.

15. (No Calculator) List the period and phase shift for  $y = \tan (\frac{1}{2}x + \frac{\pi}{4})$ .

Answer:  $P = 2\pi$ , Shift =  $-\pi/2$  ( $\pi/2$  to the left)

16. Complete the Following Table

$3\pi/2$ ( $270^\circ$ )			
$\pi$ ( $180^\circ$ )			
$\pi/2$ ( $90^\circ$ )			
$\pi/3$ ( $60^\circ$ )			
$\pi/4$ ( $45^\circ$ )			
$\pi/6$ ( $30^\circ$ )			
$0$ ( $0^\circ$ )			
$\theta$	sin $\theta$	cos $\theta$	tan $\theta$

**17. Find the exact values for each trig function. Draw the reference triangle. Check your answers using your calculator.**

a)  $\sin(-5\pi/6) =$

b)  $\cos(-7\pi/2) =$

c)  $\tan(7\pi/3) =$

d)  $\cos(2\pi/3) =$

e)  $\tan(7\pi/4) =$

f)  $\tan(-3\pi/2) =$

g)  $\sec(2\pi) =$

h)  $\cot(-5\pi/3) =$

i)  $\csc(7\pi/6) =$

**You must know the table found in the link ‘Special Angles Radians’ found in the ‘Practice Problems’ link of this web-page.**