

Math 105  
Summer 2012  
Dr. Lily Yen

# Quiz 5

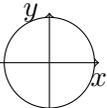
Show all your work

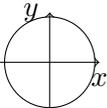
Name: \_\_\_\_\_

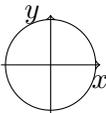
Score: \_\_\_/35

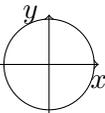
**No Calculator allowed in this part.**

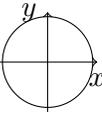
**Problem 1:** One mark each for a–g, two marks each for i–k.

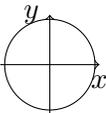
a. Express  $270^\circ$  in radians. Draw 

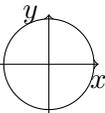
b. Express  $\frac{11}{6}\pi$  radians in degrees. Draw 

c. Evaluate  $\sin(\frac{5}{3}\pi)$  exactly. Draw 

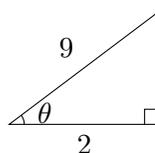
d. Evaluate  $\cos(\frac{7}{4}\pi)$  exactly. Draw 

e. Evaluate  $\tan(\frac{29}{6}\pi)$  exactly. Draw 

f. Evaluate  $\sec(11\pi)$  exactly. Draw 

g. Evaluate  $\cot(\frac{5}{2}\pi)$  exactly. Draw 

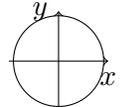
h. Evaluate  $\csc(\theta)$  exactly where  $\theta$  is as marked



i. If  $\theta$  is an angle in Quadrant II, write  $\tan(\theta)$  in terms of  $\sin(\theta)$ .

j. When drawn in standard position, the terminal arm of angle  $\theta$  contains the point

$(-8, -6)$ . Determine  $\sin(\theta) =$   and  $\cos(\theta) =$  .

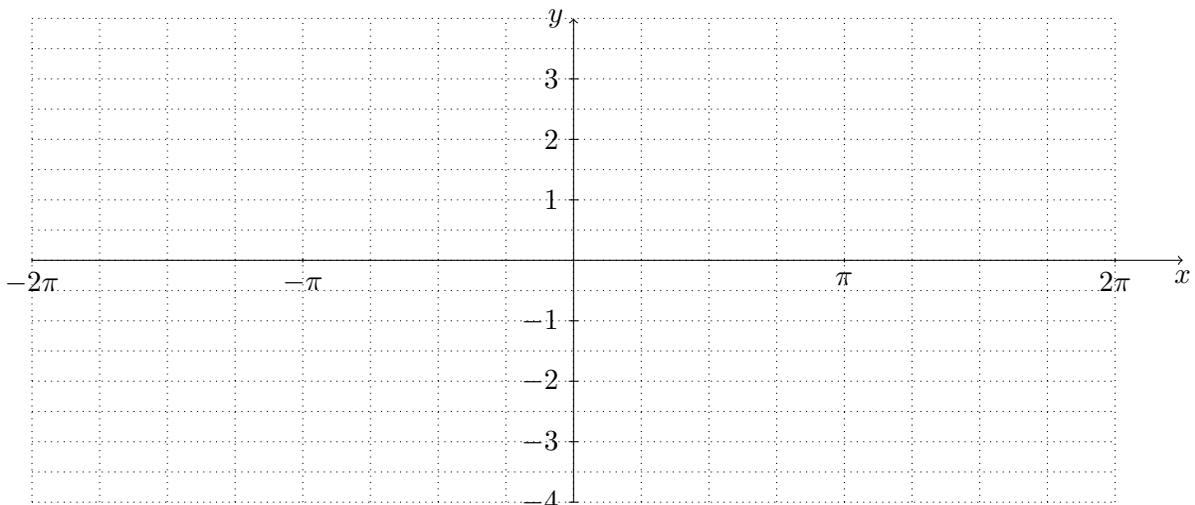


k. Find the reference number  and terminal point

determined by  $\frac{16}{3}\pi$ . Draw

Score: /15

**Problem 2:** Graph both  $f(x) = \cos(x)$  and  $g(x) = \sec(x)$  on the same coordinate system. Put key points as solid dots on the grid provided. Indicate asymptotes if any.



Score: /4

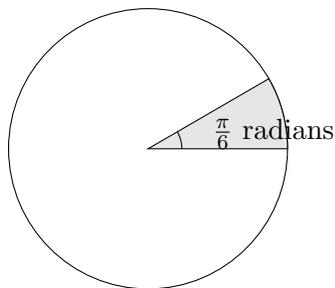
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Show all your work

Name: \_\_\_\_\_

**Calculators permitted in this part.**

**Problem 3:** The shaded sector has area 10. Find the radius of the circle.

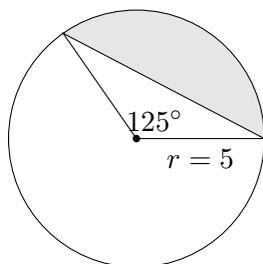


Score: /2

**Problem 4:** A circular bike track has a radius of 50 m. When John races at a linear speed of 30 km/h, what is his angular speed?

Score: /2

**Problem 5:** Find the area  and perimeter  of the shaded region.



Score: /4

**Problem 6:** From a point on the ground 500 feet from the base of a building, the angle of elevation to the top of the building is  $24^\circ$ , and the angle of elevation to the top of a flagpole atop of the building is  $27^\circ$ . Find the height of the building  and the height of the flagpole  to nearest foot.

Score: /4

**Problem 7:** A stuntman is going to jump off a tower of height 100 metres. A camera on the ground at a fixed distance from the base of the tower rotates to follow the path of the stuntman as he jumps. How far is the camera from the base of the tower if the angle of the camera is initially  $35^\circ$  above horizontal?

Score: /4