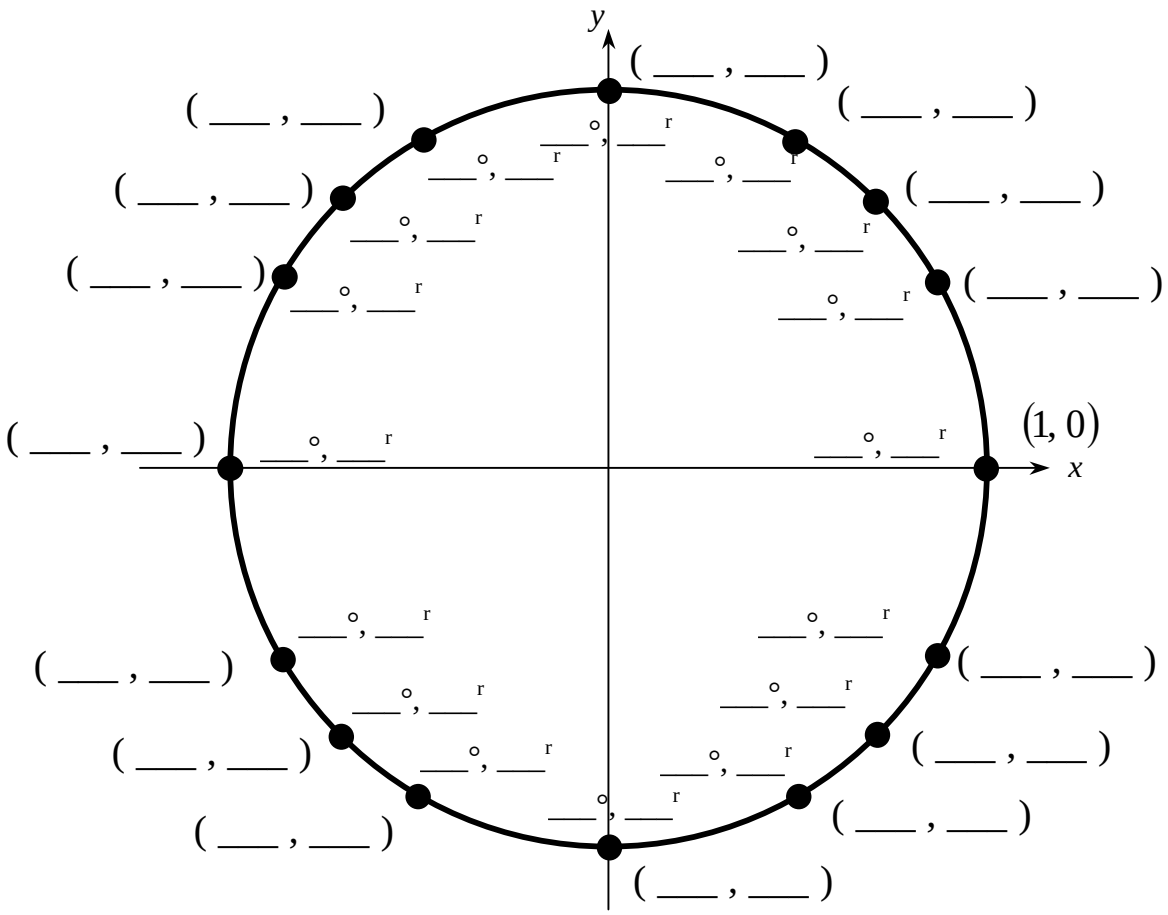
Mth 114 – Trigonometry – **Practice Exam 2 – Part 1**

NOTE: This exam should not be taken as a complete list of possible problems. It is merely intended to be an example of the length and difficulty level of the regular exam. To best utilize it as a *practice* exam, give yourself 55 minutes with no distractions. Try to emulate the classroom environment as much as possible. **Calculators are NOT ALLOWED on this portion.**

1. Complete the unit circle below. Include the radian measure, degree measure, and coordinates for each point.



2. Find the exact value of each expression.

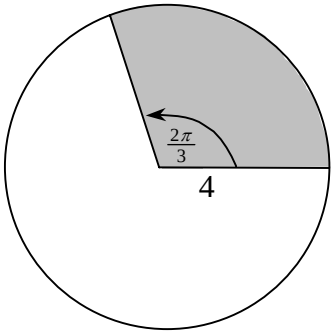
   a. $\csc\frac{\pi}{4}$

   b. $\cos\left(-\frac{2\pi}{3}\right)$

c. $\tan\frac{5\pi}{6}$

d. $\sin\left(-\frac{7\pi}{6}\right)$

3. Given the drawing below, answer the given questions.



a. Find the exact length of the arc intercepted by the given angle.

b. Find the exact area of the sector.

4. Find the exact value of s in $\left[\frac{\pi}{2}, \pi\right]$ such that $\sin s = \frac{1}{2}$.

5. What is the angular speed of a person standing on the surface of the earth?

6. Find the period, amplitude, and phase shift for each trigonometric function.

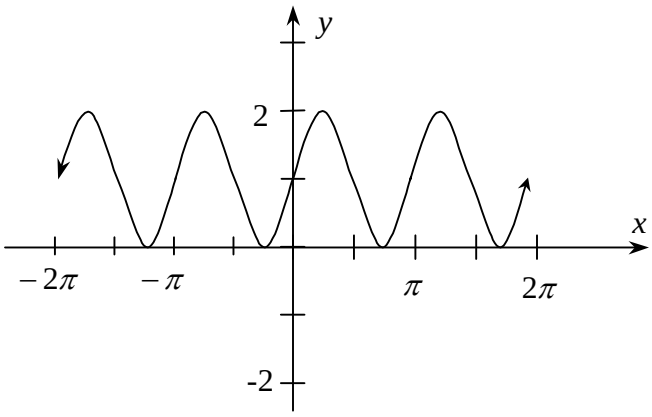
   a. $y = -2\sin\frac{1}{2}x$

   b. $y = 2 + \frac{1}{2}\cos(2x + \pi)$

   c. $y = -\cos\left(x + \frac{\pi}{2}\right)$

   d. $y = 3 + \sin\left(3x + \frac{\pi}{2}\right)$

7. Find a function of the form $y = c + a\cos[b(x - d)]$ whose graph is shown below.



8. Graph each function over a two-period interval.

a. $y = 2\sin(x - \pi)$

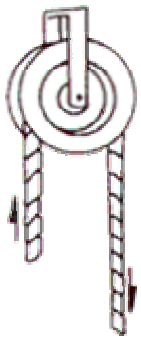
b. $y = \frac{1}{2}\sec\left[2x + \frac{\pi}{2}\right]$

c. $y = -2\tan\frac{1}{2}x$

Mth 114 – Trigonometry – **Practice Exam 2 – Part 2**

Calculators ARE ALLOWED on this portion.

9. The pulley shown has a radius of 12.96 cm. Suppose it takes 18 sec for 56 cm of belt to go around the pulley.



   a. Find the angular speed of the pulley in radians per second.

   b. Find the linear speed of the belt in centimeters per second.

10. The hour hand of a wall clock measures 6.0 in. from its tip to the center of the clock. What distance does the tip of the hour hand travel during the time period from 1:00 to 3:00?

11. A Ferris wheel has radius 50 ft. A person takes a seat and then the wheel turns $\frac{2\pi}{3}$ radians. How far is the person above the ground?