MAC 1114, Spring 2018

Exam #1

January 26, 2018

Name _____

- You will be told when to begin the work and when to terminate work on the examination. You must stop when instructed. Points may be deducted in case of violations.
- Please show your work to support your answers that require calculations. Correct but unsupported answers may not be given full credit.
- The use of a cell phone or other electronic communication devices during the examination is not allowed. The exam will be canceled and a grade of "0" will be assigned to anyone who uses a cell phone during the examination or if one is found within hands reach.
- Calculators are not allowed on this exam.
- The exam consist of three parts. Part I contains three multiple choice questions worth 10 points each. Part II contains 4 open ended questions worth 12 points each. Part III contains 2 conceptual questions worth 16 points each.

Part I

Choose your answer from five available choices. No partial credit will be given for wrong answers.

1. Match angles in degrees and radian measure.

(a) 30°	1. 2π
(b) 90°	2. $\pi/2$
(c) 270°	3. $\dfrac{\pi}{6}$
(d) 360°	4. $\dfrac{3\pi}{2}$

2. Determine the quadrant in which θ lies if $\sin\theta > 0$ and $\sec\theta > 0$.
   (a) Quadrant I
   (b) Quadrant II
   (c) Quadrant III
   (d) Quadrant IV
   (e) None of the above.

3. Find the reference angle of $\theta = \dfrac{17\pi}{3}$.
   (a) $\theta' = \frac{\pi}{3}$
   (b) $\theta' = \frac{2\pi}{3}$
   (c) $\theta' = \frac{4\pi}{3}$
   (d) $\theta' = \frac{5\pi}{3}$
   (e) None of the above.

Part II

4. This question has three parts:

   (a) Find a positive angle less than 360° that is coterminal with -510°.

   (b) Draw a picture of the angle from part (a) and find the reference angle for it.

   (c) Use the result from part (b) to find the exact value of $\sin(-510^\circ)$.

5. Find the exact value of

   (a) $\sin(37^\circ)\csc(37^\circ) + \cos(-10^\circ)\sec(-10^\circ)$

   (b) $\cos(12^\circ)\sin(78^\circ) + \cos(78^\circ)\sin(12^\circ)$

6. Find the exact value of

   (a) $\sin(60°)$

   (b) $\cot(60°)$

   (c) $\cos(45°)$

7. Given $\sin\theta < 0$ and $\sec\theta = \frac{5}{3}$, find the exact value of $\tan\theta$.

Part III

8. Find the exact values of all six trigonometric functions for $-30°$.

9. Construct a $30°, 60°, 90°$ triangle and explain why $\sin(60°)$ and $\cos(30°)$ are equal to each other.