

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

Score: \_\_\_\_\_ /15

## Homework 8 (Due Fri, May 23)

Math 1060Q – Summer 2014

Professor Hohn

Answer the following questions. Homework will be partially graded for completeness.

1. Evaluate the following. Give an exact answer.

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

(b)  $\sin\left(\frac{11\pi}{4}\right)$

(c)  $\cos\left(\frac{4\pi}{3}\right)$

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

(e)  $\tan\left(\frac{3\pi}{2}\right)$

(f)  $\cos\left(\frac{15\pi}{3}\right)$

2. Write the point on the unit circle that corresponds to the following angles.

(a)  $-\frac{13\pi}{6}$

(b)  $\frac{4\pi}{3}$

(c)  $-\frac{5\pi}{3}$

(d)  $-\frac{13\pi}{2}$

3. Find the angle corresponding to the radius of the unit circle ending at the given point. Among the infinitely many possible correct solutions, choose the one with smallest absolute value.

(a)  $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

(b)  $\left(\frac{-\sqrt{3}}{2}, \frac{1}{2}\right)$

(c)  $(1, 0)$

(d)  $\left(\frac{-\sqrt{2}}{2}, \frac{-\sqrt{2}}{2}\right)$

(e)  $\left(\frac{1}{2}, \frac{-\sqrt{3}}{2}\right)$

4. Find all solutions in the interval  $[0, 2\pi)$  to the following equations.

(a)  $\cos t = -\frac{1}{2}$

(b)  $\sec t = \sqrt{2}$

(c)  $\tan t = -1$

5. Find *all* solutions to the following equations.

(a)  $\tan t = \sqrt{3}$

(b)  $\cos t = \frac{-\sqrt{3}}{2}$

(c)  $\csc t = 2$

(d)  $\cot t = -1$

(e)  $\sin t = -1$

(f)  $\tan t = \sqrt{3}$

6. Find all numbers  $t$  such that  $(t, -\frac{2}{5})$  is a point on the unit circle.

7. Find all numbers  $t$  such that  $(\frac{3}{5}, t)$  is a point on the unit circle.

8. Find the smallest number  $x$  such that

$$\sin(e^x) = 0.$$

9. Suppose  $0 < \theta < \frac{\pi}{2}$  and  $\cos \theta = \frac{1}{5}$ . Evaluate:

(a)  $\sin \theta$

(b)  $\tan \theta$

10. Suppose  $\frac{\pi}{2} < \theta < \pi$  and  $\sin \theta = \frac{3}{4}$ . Evaluate:

(a)  $\cos \theta$

(b)  $\tan \theta$