

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

**Instructions**

Do the following problems on a separate sheet of paper (or two, or three, or four). You are allowed to consult the course text, the class notes, and the notes posted on the course website. You are not, however, allowed to collaborate with other students. **Write the solutions neatly and do not use multiple columns.** Staple your write-up, using this paper as the cover page.

**Problem 1** (2 points). We are given an angle  $\phi = \frac{11\pi}{6}$  in standard position.

- (i) Find an angle coterminal with
- $\phi$
- between
- $-8\pi$
- and
- $-6\pi$
- .

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

- (ii) Find
- all*
- angles coterminal with
- $\phi$
- .

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

**Problem 2** (2 points). We are given an angle  $\theta = 75^\circ$  in standard position.

- (i) Find an angle coterminal with
- $\theta$
- between
- $1440^\circ$
- and
- $1800^\circ$
- .

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

- (ii) (1 point) Find
- all*
- angles coterminal with
- $\theta$
- .

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

**Problem 3** (1 point). If the actual angle of an angle is  $171^\circ$ , then what is its reference angle?

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

**Problem 4** (1 point). If the actual angle of an angle is  $\frac{11}{12}\pi$ , then what is its reference angle?

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

**Problem 5** (1 point). If the reference angle of an angle in the third quadrant is  $24^\circ$ , then what is its actual angle?

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_

**Problem 6** (1 point). If the reference angle of an angle in the second quadrant is  $\frac{5\pi}{36}$ , then what is its actual angle?

Answer, in degrees: \_\_\_\_\_ Answer, in radians: \_\_\_\_\_