

## Mth 30, Homework 9 on sections 5.1, 5.2

Due by Wed, Apr 15.

---

Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 3 points.

---

### Section 5.1 Angles

- (1) Draw these angles in standard position and say which quadrant the terminal side is in:

(a)  $60^\circ$                       (b)  $150^\circ$                       (c)  $-80^\circ$

- (2) Convert the three angles in the last question from degrees to radians. Give each answer as an exact simplified fraction involving  $\pi$  and also as an inexact decimal.

(Hint: multiply degrees by  $\frac{\pi}{180}$  to get radians.)

- (3) Convert these radian angles to degrees:

(a)  $\frac{3\pi}{2}$                       (b)  $\frac{\pi}{20}$                       (c)  $-\frac{5\pi}{6}$

- (4) Draw the angle measuring  $-9\pi/4$  radians in standard position and say which quadrant the terminal side is in.

- (5) A circle has radius 9 cm.

(a) Find the length of the arc of this circle corresponding to a central angle of  $\pi/6$  radians.

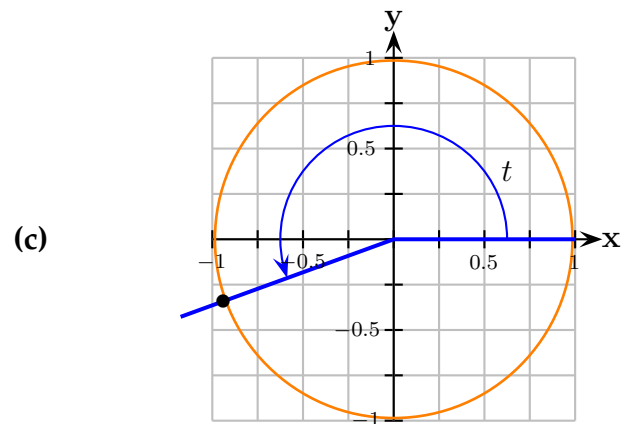
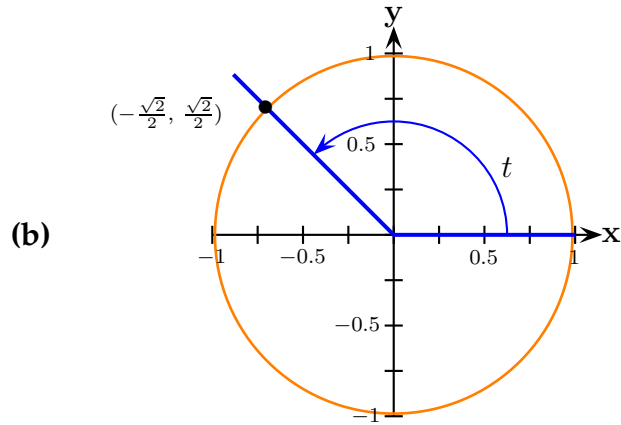
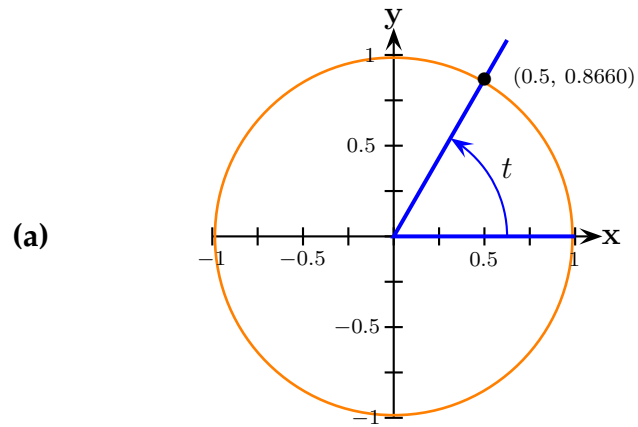
(b) Find the area of a sector of this circle corresponding to a central angle of  $\pi/6$  radians.

(Hint: Use the arc length formula  $s = r\theta$  and the sector area formula  $A = \frac{1}{2}r^2\theta$ . Make sure your answers have the correct length and area units.)

- (6) Find three different angles that are coterminal with  $-110^\circ$ . Give your answers in degrees.
- 

### Section 5.2 Unit Circle: Sine and Cosine Functions

- (7) For each displayed angle  $t$  below, find  $\cos t$  and  $\sin t$ . In part (c) use the picture to estimate the answers.



(8) Suppose  $\cos(\theta) > 0$  and  $\sin(\theta) < 0$ . Which quadrant is the terminal side of this angle in?

---

If you're stuck on a question:

- Ask me about it after class.
- Come to my office hours: Mon 4:30 - 5:30, Wed 4:30 - 5:30 in CP 317.
- Go to the Math Tutorial Lab in person in CP 303 or online.