

Mth 30, Homework 10 on sections 5.2, 5.3, 5.4

Due by Wed, Apr 17.

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

- (1) Find the exact value of $\sin(5\pi/3)$ using the following steps.
 - (a) Find the reference angle for $5\pi/3$. (In degrees it is between 0 and 90.)
 - (b) Find the exact value for sine of the reference angle. (It is one of our special angles.)
 - (c) Check which quadrant $5\pi/3$ is in and decide if sine is positive or negative there.
 - (d) Then $5\pi/3$ equals part (b) with the sign from (c).
- (2) Find the exact value of $\cos(11\pi/4)$ using a reference angle as in the last question.
- (3) If $\cos(t) = -3/4$ and t is in quadrant II, find $\sin(t)$.
(Hint: Use the Pythagorean Identity.)
- (4) Compute the exact value of $\csc(\pi/4)$
(Hint: exact means 'not a decimal'. Your answer should have a square root – but make sure it's not in the denominator.)
- (5) Use a reference angle to find the exact value of $\cot(7\pi/6)$ as follows:
 - (a) Draw the angle $7\pi/6$ and note the quadrant.
 - (b) The smallest angle the terminal side you have drawn with the x -axis is the reference angle. Is it $\pi/6$?
 - (c) Find \cot of the reference angle.
 - (d) Adjust the sign if necessary depending on the quadrant.
- (6) Suppose $\cos t = -1/3$ and $\sin t < 0$.
 - (a) Which quadrant is angle t in?
 - (b) Find $\sec t$
 - (c) Find $\tan t$
(Hint: For part (c) you'll need the Pythagorean Identity.)
- (7) Use a cofunction identity to fill in the missing angle:

$$\cos(\pi/5) = \sin(\quad ? \quad)$$

- (8) You walk 70 feet away from the base of a tower and find that the angle of elevation to the top of the tower is 52° . Give the height of the tower as a decimal in the correct units.

(Hint: 'Angle of elevation' means the angle from the horizontal up to what you are looking at. Draw a diagram for this question, showing the right triangle. Decide which trig ratio is needed.)

If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.