

**Pre-Calculus Chapter 3 Review**

Name \_\_\_\_\_

1. Find exact radian measure of:

a.  $45^\circ$

b.  $135^\circ$

c.  $-270^\circ$

2. Find the degree measure of:

a.  $\frac{4\pi}{3}$

b.  $\frac{11\pi}{6}$

c.  $3\pi$

3. Show how to find the decimal approximation for the degree measure of:

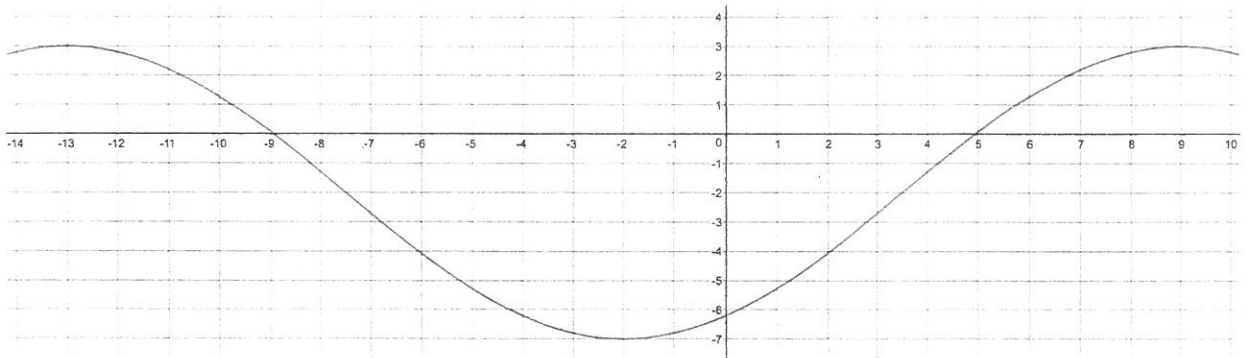
a. 7.2 radians

b. 4.6 radians

4. A. Draw a sketch illustrating the angle  $\cos^{-1}\left(\frac{5}{13}\right)$

B. Show another angle equal to  $\arccos\left(\frac{5}{13}\right)$  that terminates in a different quadrant.

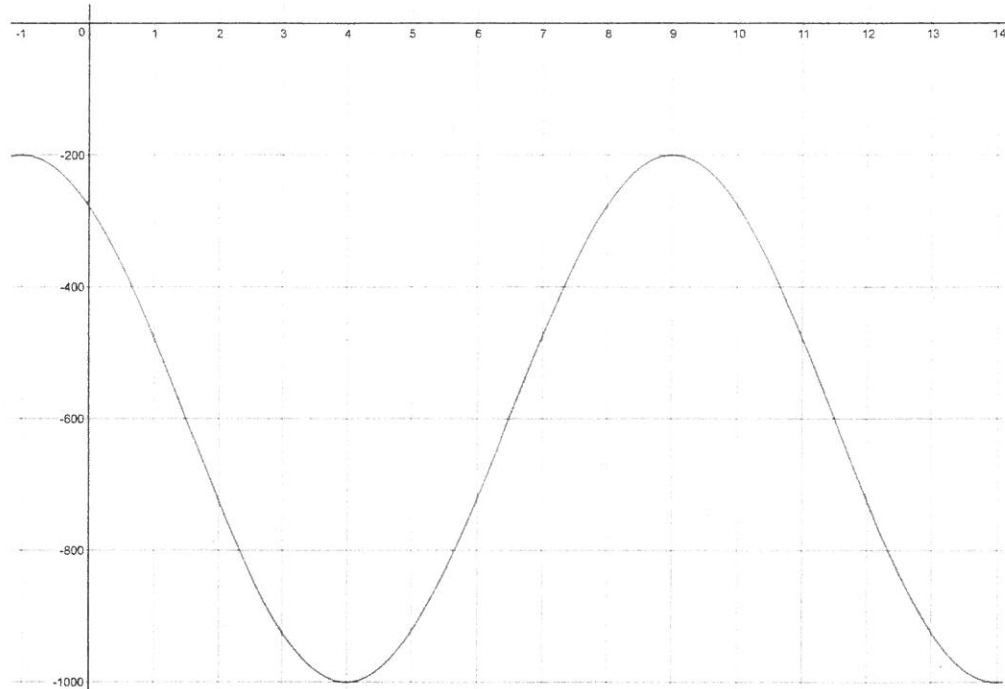
5.



A. Write an equation using cosine.

B. Write an equation using sine.

6. *Porpoising Problem:* Assume that you are aboard a research submarine doing submerged training exercises in the Pacific Ocean. At time  $t = 0$  you start porpoising (alternately deeper and then shallower). At time  $t = 4$  minutes you are at your deepest,  $y = -1000$  meters. At time  $t = 9$  min you next reach your shallowest,  $y = -200$ m.



- Find an equation expressing  $y$  as a function of  $t$ .
- Your submarine can't communicate with ships on the surface when it is deeper than  $y = -300$  m. At time  $t = 0$ , could your submarine communicate? How did you arrive at your answer?
- Between what two nonnegative times is your submarine first **unable** to communicate?