

Eastern Oregon University Concurrent Enrollment/Credit by Proficiency Program

Math 112, Spring, 2015

Exam 1

name: _____

Show any relevant work. For each problem, circle your answer

1. (12 points) For each angle below, change degrees to radians and radians to degrees:

a. 210°

b. $-3\pi/4$ rad

c. $13\pi/4$ rad

d. 480°

2. (6 points each) Find the exact value of each of the following. Include a reference angle sketch.

a. $\cos^{-1}(-\frac{1}{2})$

b. $\tan(-\frac{\pi}{3})$

c. $\csc \frac{2\pi}{3}$

d. $\cos(\sin^{-1}(\frac{1}{3}))$

3. (6 points) Find two angles, one positive and one negative, which are coterminal with $-\frac{\pi}{6}$.
4. (10 points) A central angle θ of a circle of radius 5 is subtended by an arc of length 8. Find the measure of θ in both radians and degrees.
5. (12 points) From the top of a 100 foot tall lighthouse, the angle of depression to a boat off the coast is 8° . How far is the boat from the base of the lighthouse?

6. (12 points) Solve each triangle below. Sketch appropriate triangles labeled such that side a is opposite angle A , side b opposite angle B , and side c opposite angle C .

a. $a = 7$, $b = 9$, $c = 14$

b. $A = 80^\circ$, $B = 45^\circ$, $c = 12$ feet

7. (12 points) The wheel of a bicycle has a radius of 14 inches and is rotating at 200 rpm. How fast is the bicycle traveling in inches per minute? In miles per hour?

8. (12 points) If $\sin \theta = 2/7$ and $\cos \theta < 0$, find the values of the other five elementary trigonometric functions at θ . Draw a sketch with appropriate reference angle.

a. $\cos \theta =$

b. $\sec \theta =$

c. $\csc \theta =$

d. $\tan \theta =$

e. $\cot \theta =$