Quiz 5 Math 112, Winter '17, Wray Name: Key

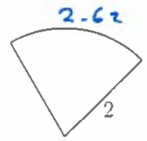
You will have at least 20 minutes to complete the quiz. You may use a calculator for computations, but you must show your work. If you cannot complete a problem, show as much of your thought process as possible.

1. [3 pts] On a circle of radius $\frac{1}{2}$, what is the arc length traversed by an angle of $\pi/7$?

Arc length $= \frac{1}{2} \cdot \frac{\pi}{7} = \frac{\pi}{14}$

2. [3 pts] Find the angle α below. Assume the length of the arc is 2.62 units.

$\alpha = \frac{2.62}{2}$ rad $= 1.31$ rad



3. [6 pts] Fill in the missing angles and sides of the triangle shown below.

$\frac{\sin\theta}{2} = \frac{\sin(11\pi/30)}{3} \rightsquigarrow \sin\theta = 0.609$

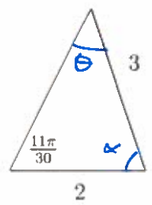
$\theta = 0.6548$ rad

$\alpha = \pi - \frac{11\pi}{30} - .6548 = 1.3349$ rad

$c^2 = 2^2 + 3^2 - 2\cdot(2)(3)\cos(1.3349)$

$c^2 = 10.2$

$c \approx 3.194$



4. [4 pts] Suppose you travel due east for 13 kilometers, and then you head 5 kilometers in a direction 40° south of east. How far have you traveled?

$c^2 = 13^2 + 5^2 - 2(13)(5)\cos(140^\circ)$

$c^2 = 293.6$

$c = 17.13$ km

5. [4 pts] Consider an isosceles triangle where the two equal sides are a length of 4 and the angle between the equal sides is 30°. What is the length of the final side?

$c^2 = 4^2 + 4^2 - 2(4)(4)\cdot\cos(30^\circ)$

$c^2 = 4.29$

$c = 2.07$