

Math 120
Exam 1
February 1, 2008

Name: _____

1. Your exam contains 7 questions and 5 pages; Please make sure you have a complete exam.
2. The entire exam is worth 100 points. Point values for problems vary and these are clearly indicated. You have 50 minutes for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**; you will not receive any partial credit unless all work is clearly shown. If in doubt, ask for clarification.
4. If you need extra space, use the back page of the exam and clearly indicate this.
5. You are allowed one 8.5×11 sheet of handwritten notes (both sides). Graphing and scientific calculators are allowed.
6. Leave answers in exact form (as simplified as possible) or round to 4 decimal places.

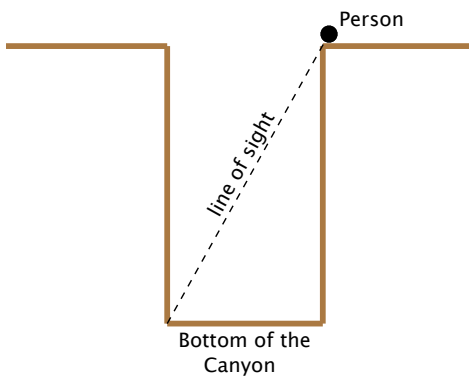
Problem	Total Points	Score
1	16	
2	12	
3	18	
4	4	
5	16	
6	16	
7	18	
Total	100	

1. (16 pts.) A person is riding a ferris wheel with a radius of 30 feet. The wheel rotates once every two minutes.

(a) (6 pts.) Find the distance along the arc that the rider travels in 30 seconds.

(b) (10 pts.) Find the angular and linear speeds of the rider. (Include units.)

2. (12 pts.) A person stands at the edge of a straight-walled canyon and measures the angle of depression to the bottom of the other side of the canyon to be 72° . If the distance across the canyon is 50 meters, how deep is the canyon? (Ignore the height of the person.)



3. (18 pts.)

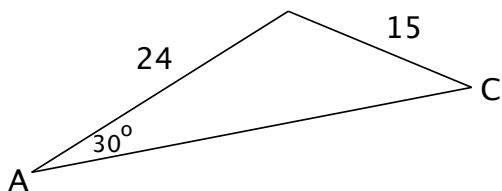
(a) (5 pts.) Find the reference number of $t = \frac{32\pi}{3}$.

(b) (6 pts.) Find the point on the unit circle determined by $t = \frac{32\pi}{3}$.

(c) (7 pts.) Find the **exact value** of $\tan \frac{32\pi}{3}$.

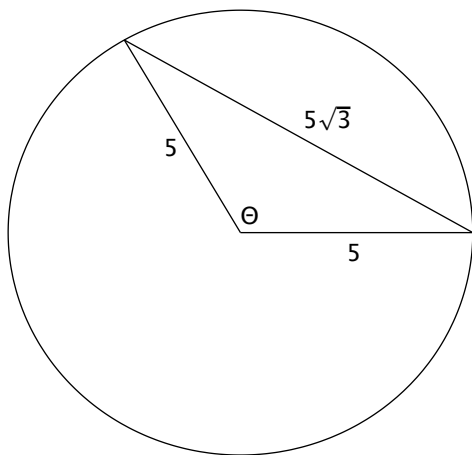
4. (4 pts.) In what quadrant does the angle $\alpha = 13$ radians lie?

5. (16 pts.) Given that $\angle A = 30^\circ$, $a = 15$, $c = 24$, find **all possible** values of the angle C (See the **tentative** sketch below).



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6. (16 pts.) Find the values of the trigonometric functions of t given that $\sin t = \frac{8}{9}$ and $\cos t < 0$.

7. (18 pts.) Find the following given the figure below.



(a) (10 pts.) The angle θ

(b) (8 pts.) The area of the shaded region