

# Math 113 – Spring 2002 – Exam I

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

- (a) To receive credit for an answer, you must justify that answer. No work no credit.
- (b) Whenever possible, give **EXACT** values.

Problem	Points	Scores
1	10	
2	30	
3	15	
4	15	
5	25	
6	25	
Total	120	

1. Convert to decimal degree form:

(10 points)

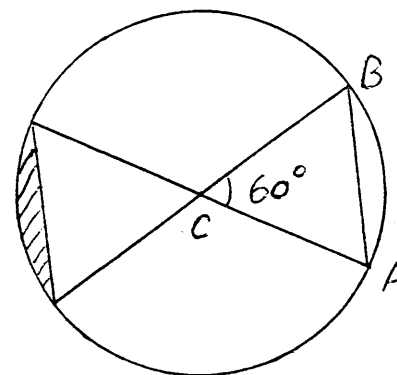
$$97^{\circ}19' =$$

$$\frac{2}{\pi} \text{ rad} =$$

2. The area of triangle  $CAB$  is  $10 \text{ units}^2$ , and  $C$  is the center of the circle.

(a) Find the **EXACT** value of length  $|CA|$ .

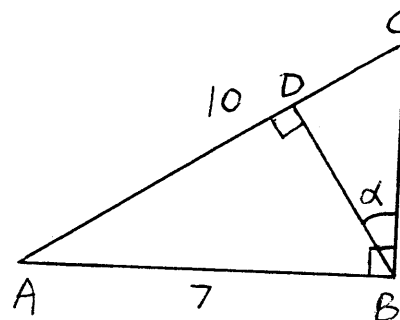
(15 points)



(b) Find the area of the shaded region. (Keep **EXACT** values.)

(15 points)

Let  $|AC| = 10$  and  $|AB| = 7$ . Find the **EXACT** values of  $\sin \alpha$  and length  $|BD|$ . (15 points)

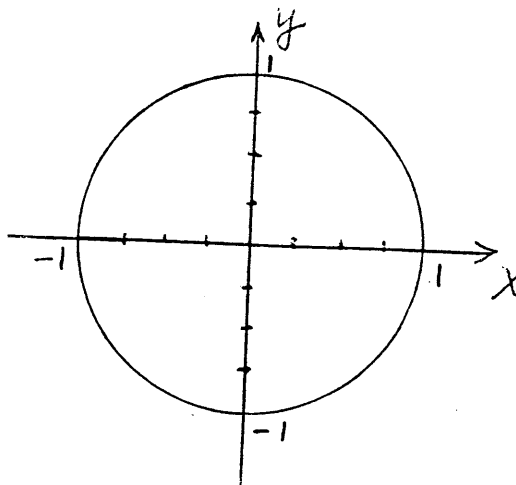


Given  $\tan \beta = -\frac{1}{2}$  with  $\pi \leq \beta \leq 2\pi$ , find all possible values of  $\sin \beta$ . (Keep **EXACT** values.) (15 points)

Let  $\sin \alpha = -\frac{1}{4}$  with  $-\pi \leq \alpha \leq \pi$ .

(a) With care, sketch all possible angles  $\alpha$ .

(10 points)



(b) Find all possible values of  $\cos \alpha$  and  $\tan \alpha$ . (Keep **EXACT** values.)

(15 points)

Walking to the west, you see a light tower at an angle of  $18^\circ$  North of West; walking 20 feet farther you see the tower at  $70^\circ$  North of West.

(a) Draw a figure, showing all given quantities.

(8 points)

(b) While keeping on the course to the west, find your closest distance to the tower. (17 points)