

Math 113

EXAM I, Feb. 21, 2000, (1 hour).

NAME:

SECTION:

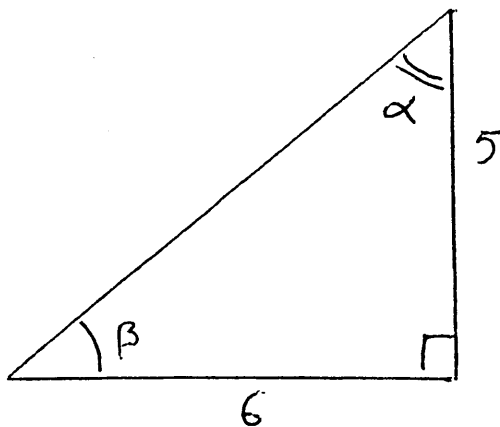
I	II	III	IV	V	VI	Total
15	10	5	25	25	20	100

To receive credit for an answer, you MUST show work justifying that answer.
WHENEVER POSSIBLE, GIVE EXACT VALUES.

I.

(15 points)

Evaluate (exactly) the cosines, the sines and the tangents of the angles α and β .

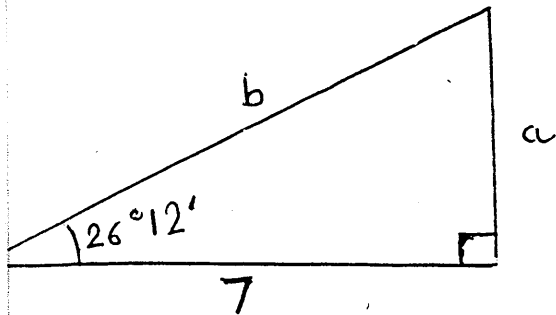


$\cos(\alpha) =$, $\sin(\alpha) =$, $\tan(\alpha) =$

$\cos(\beta) =$, $\sin(\beta) =$, $\tan(\beta) =$

Using your calculator, evaluate the angles α and β .

II. Using your calculator, evaluate a and b (length of the sides). KEEP AT LEAST 4 DIGITS after the decimal point. (10 points)

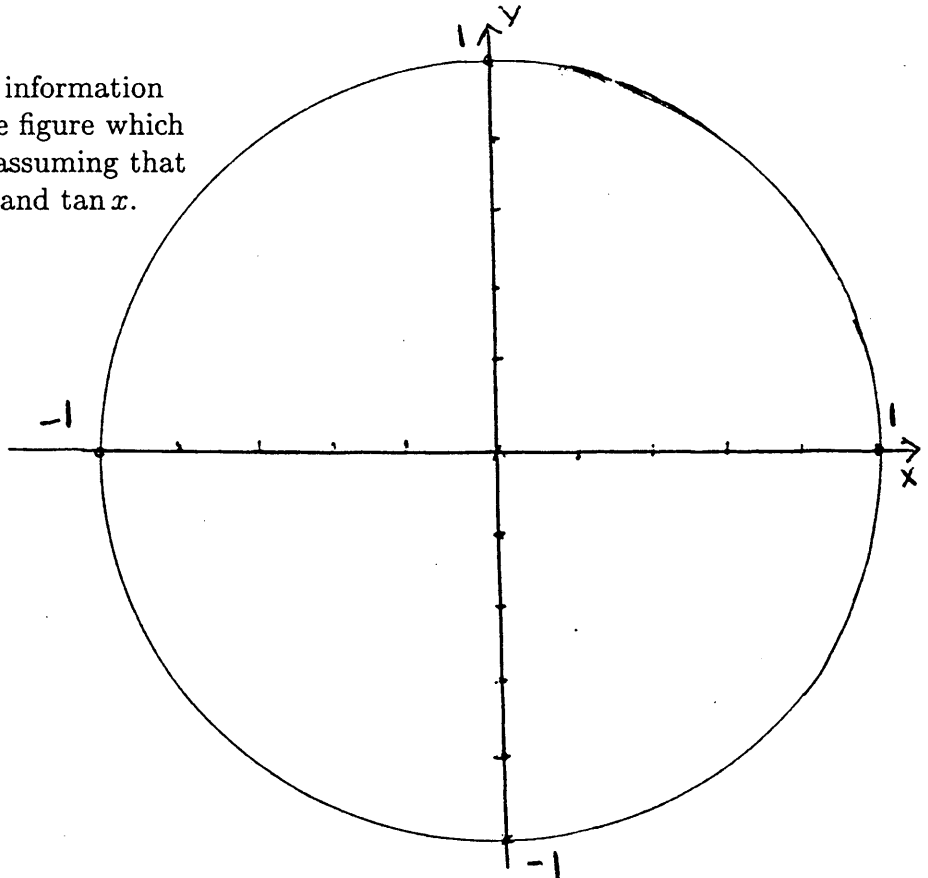


III. Convert $26^{\circ}12'$ in radians (keep exact values). (5 points)

IV. (25 points)

1) Given that $\cos x = \frac{-2}{5}$, show on the figure what are the possible terminal sides for the angle x (in standard position).

2) If we are given the additional information that $\tan x > 0$, show on the same figure which must be the terminal side. Still assuming that $\tan x > 0$, evaluate exactly $\sin x$ and $\tan x$.



V. From a point A , one sees the top of a vertical pole at an angle of elevation of 60° . Point B is located 25 ft away from point A , on the other side of the pole. From point B , the top of the pole is seen at an angle of elevation of 42° . How far is point A from the base of the pole?
(25 points)

Method imposed: Solve this problem with the tools of Chapter 1 (Right Triangle Ratios, definitions of sine, cosine etc..). (No solution using the law of sines or the law of cosines, to be seen in Chapter 6).

VI. Given that the radius of the circle is 5 (units), and that the length of the line segment AB is 4, evaluate the length of the arc from A to B , and the area of the circular sector with central angle θ . Keep 4 digits beyond decimal point. (20 points)

HINT: Evaluate $\sin(\frac{\theta}{2})$. Then, using your calculator, determine $\frac{\theta}{2}$.

