

REMINDER: Final on Monday May 9 at 7:25.

Math 113

EXAM III, April 18, 2005, (1 hour).

NAME:

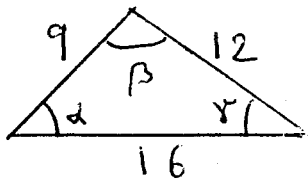
SECTION:

Instructor:

I	II	III	IV	V	TOTAL
24	24	24	24	24	120

TO RECEIVE CREDIT FOR AN ANSWER,
YOU MUST SHOW WORK JUSTIFYING THAT ANSWER.

I. (24 points) Evaluate the angles in the triangle:



II. (24 points) A plane is flying at a speed of 500 mi/h (speed relative to air), with a heading of 80° (80° east of north). A wind of 60 mi/h is blowing FROM 350° (i.e. 10° west of north). Find the ground speed of the plane and in which direction the plane is actually going.

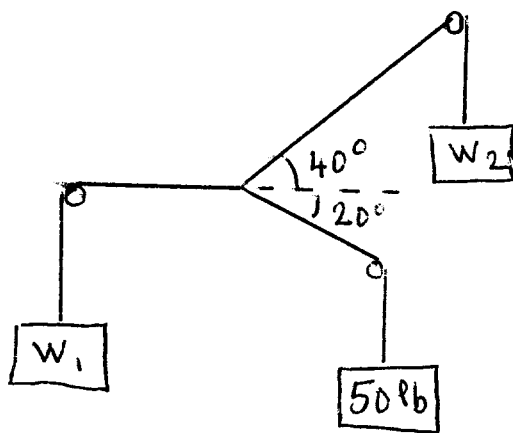
III. (24 points)

Is the equality

$$\cos(x + \pi) = \cos x + \cos \pi$$

true for all values of x , for no value of x , or for some values of x only. In the latter case, give all such values of x in the interval $[0, 4\pi]$.

IV. (24 points) Three weights are attached as shown on the figure. Assume that it is an equilibrium position, with the cable pulling on the left horizontal, evaluate the weights W_1 and W_2 .



V. (24 points) On flat ground an observer sees the top of an antenna at an angle of elevation of 25° . Behind this first antenna, there is a second antenna, of the same height, whose top is seen at an angle of elevation of 15° . The distance on the ground between the 2 antennas is 40 ft. Evaluate the height of the antennas.