

Rosay

Math 113

EXAM II, Oct. 31, 2000, (1 hour 1/2).

NAME:

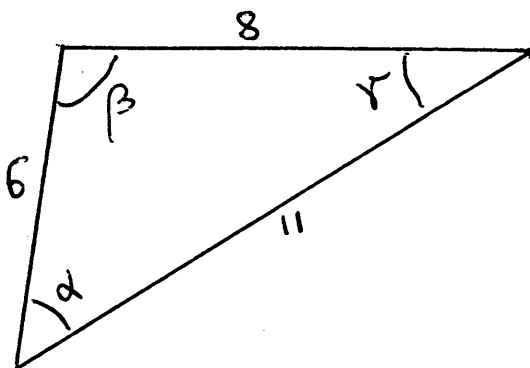
SECTION:

I	II	III	IV	V	VI	Total
25	20	25	20	30	30	

To receive credit for an answer, you **MUST** show work justifying that answer.

I. Determine the angles in the triangle shown below.

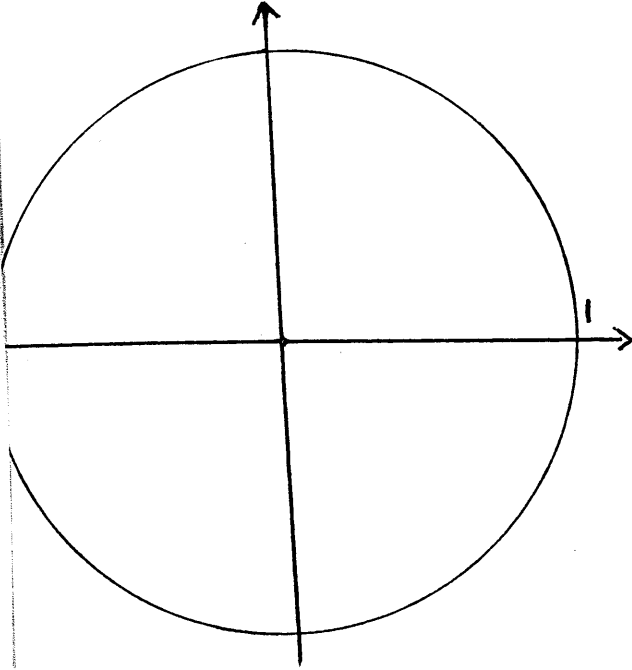
(25 points)



II. Give the EXACT values of: $\sin 105^\circ$, $\cos 105^\circ$, and $\tan 105^\circ$.

(20 points)

III. Given $\cos \theta = \frac{1}{4}$, what are the possible values of $\cos(\theta + \frac{\pi}{3})$? On the figure, show the possible terminal sides for the angle θ (in standard position), and for the angle $\theta + \frac{\pi}{3}$. (25 points)

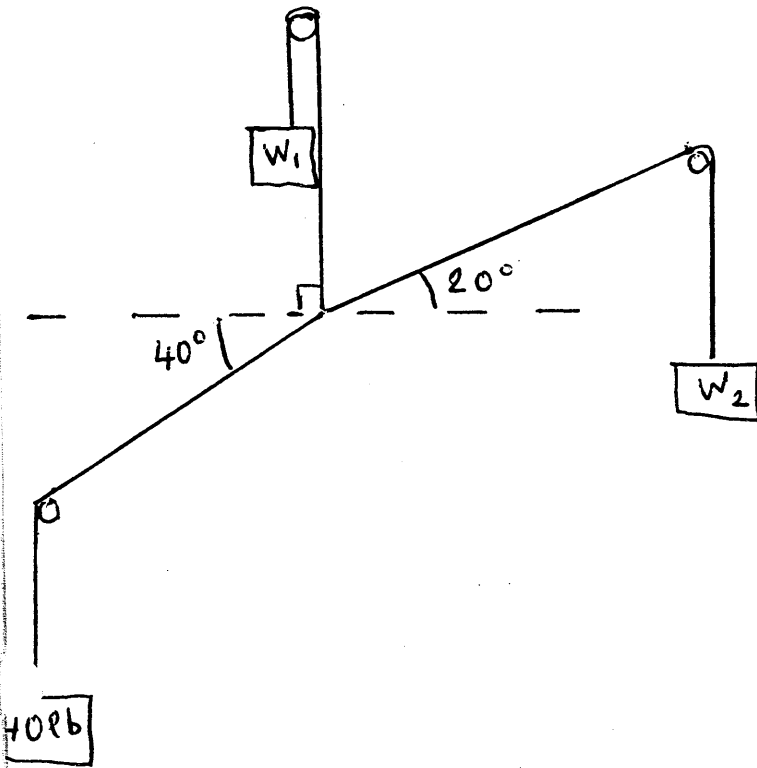


IV. Verify the identity

(20 points)

$$\frac{\cos(x + y)}{\tan x \tan y} = \frac{(1 - \sin^2 x)(1 - \sin^2 y)}{\sin x \sin y} - \cos x \cos y.$$

V. Determine the weights W_1 and W_2 so that the following is an equilibrium position. (30 points)



VI. In football, the distance between the right upright pole and the left upright pole of a goal post is 5.64 m. . Looking at a goal post, from a point on a sideline, there is an angle of 26.56° between the direction of the sideline and the direction (on the ground) to the left pole, and there is an angle of 32.26° between the direction of the sideline and the direction to the right pole. Is the observation made from the left sideline or from the right sideline, when facing this goal post? Draw a figure. How wide is the football field? Using the given data, can one say how long it is? (30 points)

Do not assume that the field has regulation size.