

NAME: \_\_\_\_\_ Student # \_\_\_\_\_ GROUP: \_\_\_\_\_  
ENG 1440 Lab # 10 BONUS

A UFO (Unidentified Flying Object) landed in South Winnipeg (near the U of M campus) and was seen taking off carrying three (3) unidentified packages (rumor has it they were Engineering students). The masses of the students are  $M_1 = 100 \text{ kg}$ ,  $M_2 = 65 \text{ kg}$  and  $M_3 = 140 \text{ kg}$ . Their location in the  $5 \text{ m}$  radius space craft is shown in Figure 1(b) below.

The message back from the space craft is that the students will be returned if you can replace these forces by a single force and correctly locate its point of application with respect to the origin,  $O$  in the figure. (Use  $g = 9.8 \text{ m/sec}^2$ )

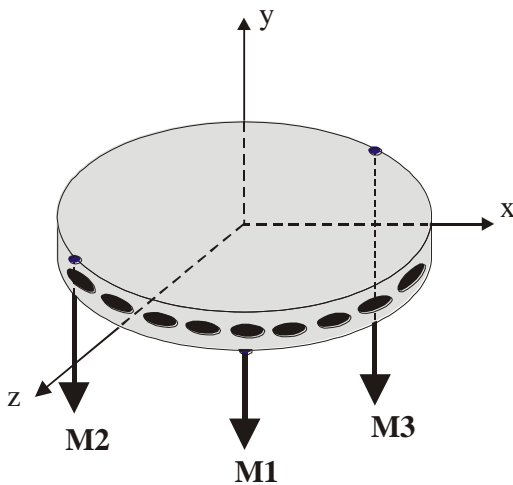


Figure 1(a)

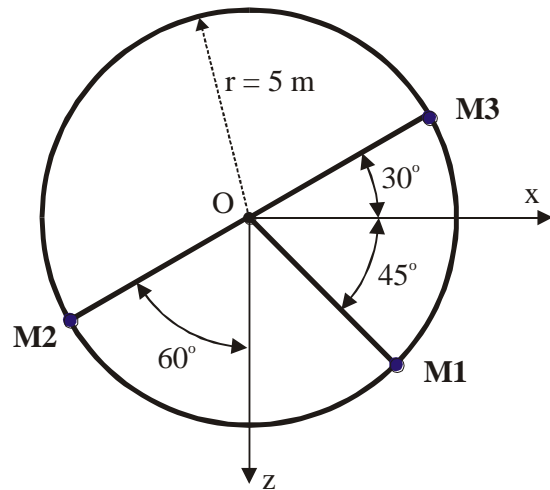


Figure 1(b) - Location of Masses

ANSWER (Provide detailed solution):