

HOMEWORK 3

This problem is in addition to problems assigned on the Course Calendar.

Problem 1: In this problem, you are given an Arcade model of a body in two dimensions subject to forces which are not in equilibrium. You need to calculate the magnitude, direction, and location of *exactly two* forces to add to the model which will put the body in equilibrium. You'll submit both your calculations and your modified Arcade file using procedures from homework 1.

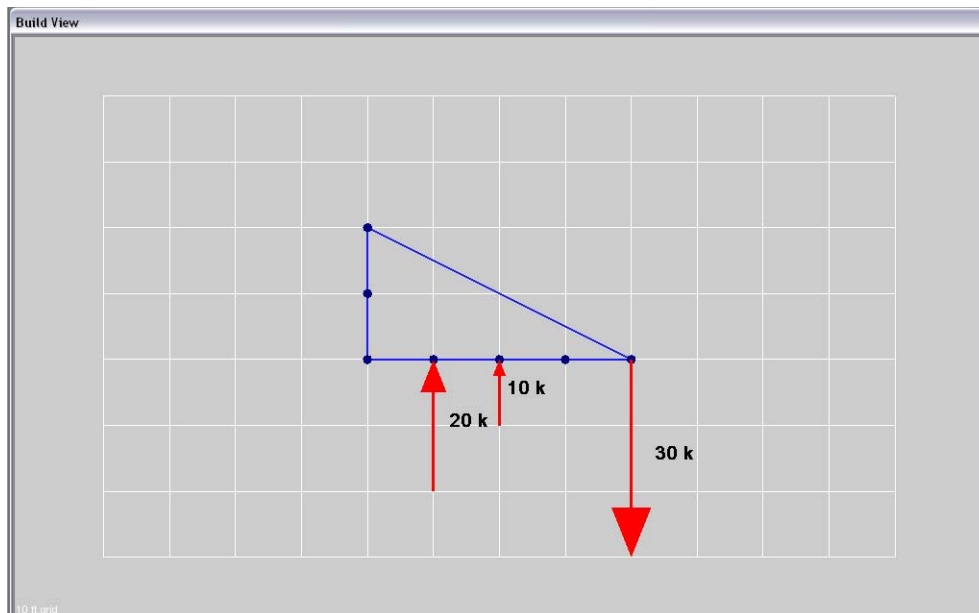
There is an infinite number of correct answers to this problem. I would like to see the class generate as many different answers as possible.

Detailed steps are described below:

- **Get the File:**
 - Find the file *body-equilibrium-problem-1.rcd* from the following directory on Olmsted/Classes:

Arch324-Martini-SP04\homework_files\hw_03

- Copy the file to an area where you can work on it.
- **Open the file and modify it:**
 - Open the file. The model should appear as follows (the grid module is 10 feet)



- Observe that the sum of the horizontal forces is zero, and the sum of the vertical forces is zero.
- Run the simulation and observe that the model rotates under this system of forces (therefore, the system of forces must generate a moment).
- Calculate the moment generated by the forces, and use that result to determine your answer.
- Test your answer by modifying the Arcade model and running the simulation.

- **Submit your calculations, hardcopy, and computer file.**
 - **Submitting calculations**
 - Include your calculations with the other paper-based homework submissions, including the hard copy of the screen, as described below.
 - **Creating and submitting hard copy.** (the same procedure as HW 1)
 - In Arcade, click *View > Full View Mode*.
 - Hit the *Print Screen* key. This puts an image of the screen in the clipboard.
 - Start *Photoshop* and create a new document.
 - Click *Edit > Paste*. The screen image will appear.
 - Click *Image > Image Size...*
 - Turn off the check box labeled *Resample Image*.
 - Set the Width to 8 inches.
 - Click OK in the dialog box.
 - Print the document and write your name on it. Attach it to the other solutions you submit with homework 3. Place the page adjacent to the page which has calculations for this problem.
 - Close Photoshop (there is no need to save the Photoshop file).
 - **Creating and submitting the file.** (the same procedure as HW 1)
 - Save your modified Arcade file and exit Arcade.
 - Copy the file to the following directory:

Arch324-Martini-SP04\submit\hw_03\YOURNAME_EMAILID

Where *YOURNAME_EMAILID* corresponds to a combination of your last name and email id, i.e. MARTINI_KM6E.