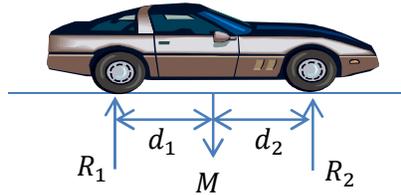


Take 3 full minutes to read the ENTIRE cover sheet first.

SUBMIT script file (NO ZIP) before the end of the class time. Turn in cover sheet.

A vehicle, of mass M (in kg), is on a platform. The wheels's position d_1 and d_2 (in meters) compared to the center of gravity are known. Calculate the reaction forces at the wheels R_1 and R_2 (in kg) using graphical analysis only.



Don't panic: the equations have been solved for you, and therefore the problem can be solved graphically. By solving the physics, R_2 can be expressed as a function of R_1 by two equations. These equations are linear equations of the form $y(x) = m * x + b$:

Equation 1: $R_2(R_1) = -R_1 + M$

Equation 2: $R_2(R_1) = \frac{d_1}{d_2} * R_1$

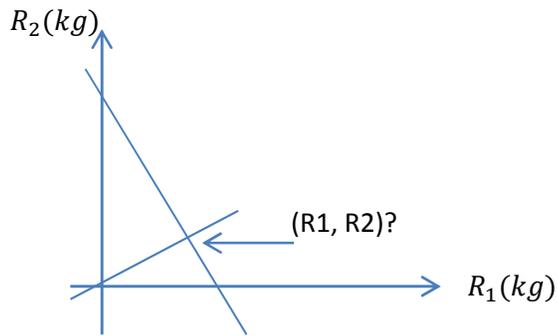
Assuming that the mass and both distances are known by the user, develop a program that can solve the reactions for any vehicle by plotting both equations above and reading (R_1, R_2) on the intersection of these lines. The platform used can handle a maximum reaction (per wheel) of 800kg. Will it break? When complete, fill in the table (5pts):

Mass (kg)	d1 (meter)	d2 (meter)	R1 (kg) no decimals	R2 (kg) no decimals	Break?
2100	1.2	1.8			
1450	1.8	2			

Using the full 7 steps taught in this class, and only the material taught in this class at this time, develop a program that is easily reusable to solve the problem.

Step1(5pts):

Step2:



Step3: (Equations given already)

Step4: (Assume values from scenario1 (line 1 in the table))

Step5: (solve graphically – hence no step5 needed)

Step6: not applicable

Step7a (comments) and 7b (place directly on the script file).

Requirements for the program itself:

- **(12pts)** prompt the user for the values of d_1, d_2, W .
- **(15pts)** define all vectors that can plot equation1 and 2
- **(10pts)** plot correctly, using colors, markers and line specifications AS SHOWN in the videos.
- **(15pts)** label the plot properly and fully

(7pts – other random errors!)

Within script:

name/section/description **(3pts)**

commands to clean up previous execution of MATLAB codes **(3pts)**

comments (which is considered the algorithm) **(5pts)**

spacing of code **(5pts)**

appropriate variable names (no single letters) **(5pts)**

semi-colon hiding intermediate calculations **(5pts)**

Step7c **(5pts)**: Verify mathematically your solution seems accurate.