Homework 11 - Physics 240
System of Spring and Matrix Inversion

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1 Introduction

The purpose of this excercise is to solve a system of spring using the matrix inversion method. The static solution of the system with 4 springs are given.

What I did was basically hard code the matrix using the values given in the homework, I could have setup different arrays of k and L and then using the index to setup the matrix that way, but since we only have 6 matrix for the 6 k and L given, I decided to hard code 6 matrices. I then compute the values for Frw using the matrix and numerical method, and they all agree.**

2 Discussion

My physical argument for the 5 cases are as followed:
a) I get 0 for F, which makes sense, because the system is not moving.
b) I get -2.88 for F, this could mean that the system is moving to the right.
c) I get 0.5 for F, this means that the system is now moving the opposite direction.
d) I get 0.6 for F, this means that the system is still moving to the opposite direction.
e) I get -1 for F, this means the system now has changed the direction and moving to the right.

The plot I got looks like this:

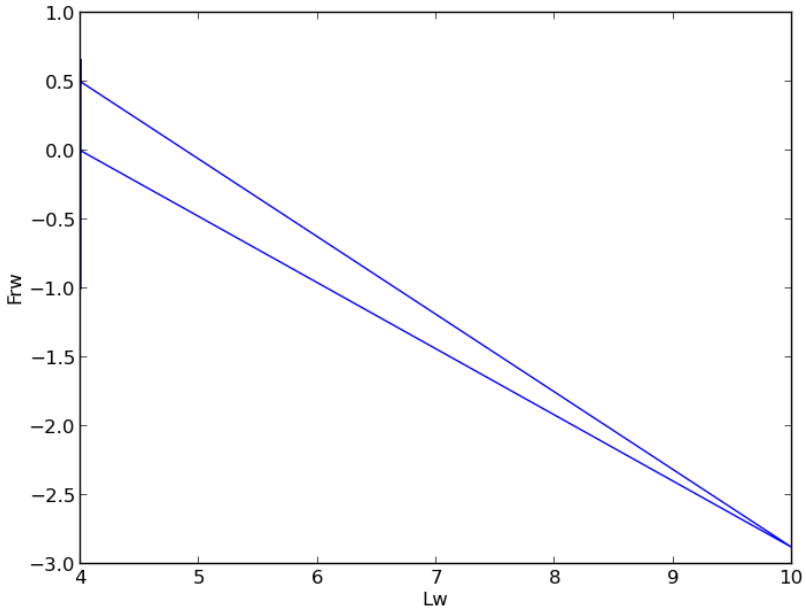

Figure 1: Plot of F and Lw

I don't know what's wrong here since I can't make sense of this figure, what I did was to plot each value of F with the given values of Lw.

*note on the last matrix e, it was not invertable, I had to change k_2 from 1 to 0 for the first line, and so the calculated value was 0 whereas the numerical value is 0.6