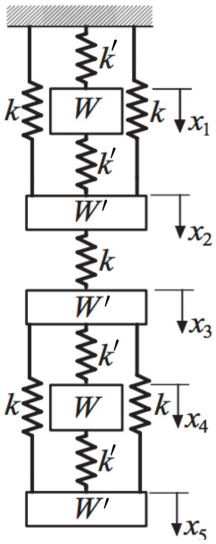
1. Obtain the best fitting functions for the following dataset composed of (xdata, ydata1) and (xdata, ydata2) and their standard deviation. Plot the data points and the fitting functions.

2. Given the system below, write the equations and solve for the vertical displacements when



W = 2 Kg

W' = 1.5 Kg

k = 0.3 N/m

k' = 1 N/m

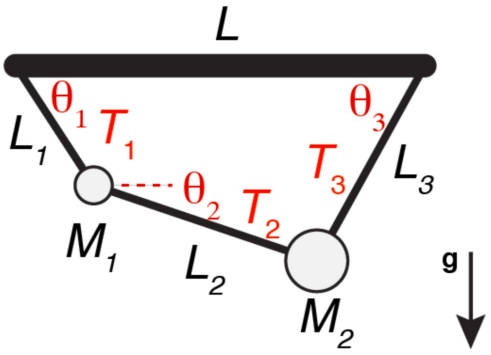
3. Given that

L = 3 m

L_1 = 0.5 m

L_2 = 1.5 m

L_3 = 2.5 m



g = -9.8 m/s^2

Solve for the three angles, and the three tensions using Newton-Raphson's method and plot the positions of the balls at equilibrium when (a) M_1 = 1 Kg, M_2 = 5 Kg, (b) M_1 = 1 Kg, M_2 = 0 Kg.

Hint: You can take as unknowns six angle variables sin θ and cos θ, and use the relations $\sin^2 \theta + \cos^2 \theta = 1$ as additional equations.