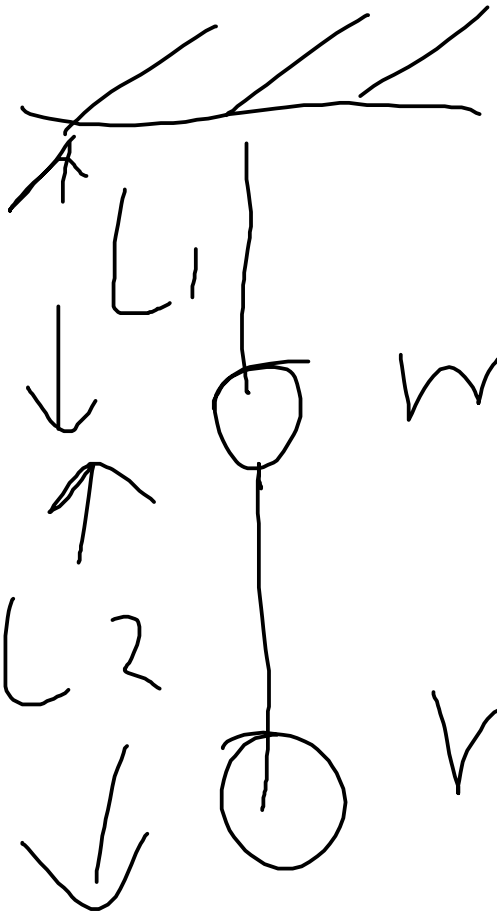


Length ratio = $\frac{L_1}{L_2}$

Mass ratio = $\frac{M_1}{M_2}$

Initial Mass M1 =1 kg and M2=1kg

Initial Length L1 =1 m and L2 = 1m.
Take initial Position x =0 and give some velocity choice

Project: We have double pendulum system. Take a two pendulum of masses of unit length and unit weight. Now you have find out the time period of oscillation for each of pendulum for

1.) different length ratio (Length1/Length2) from 0.2 to 2 by a step of 0.1 (keeping the mass ratio is equal to 1) and determine time period of oscillation.

Total of cases = (2- 0.2)/0.1= 18 Cases

You start from length1/length2 =1 (keeping the mass ration =)and then you start reducing by 0.1 in each step and caculate the time period of oscillation.

Once you reached the length ratio 0.2 you stop.

You start again from length1/length2 =1 (keeping the mass ration =)and then you start increasing by 0.1 in each step and caculate the time period of oscillation.

2 different mass ratio (Length1/Length2) from 0.2 to 2 by a step of 0.1 (keeping the length ratio is equal to 1) and determine time period of oscillation

Total of cases = (2- 0.2)/0.1= 18 Cases

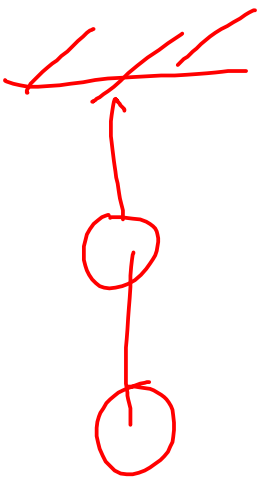
Same Procedure for mass ratio variation, here you keep length raio same and vary the mass ratio like above metioned. Obtain the time period of oscillation.

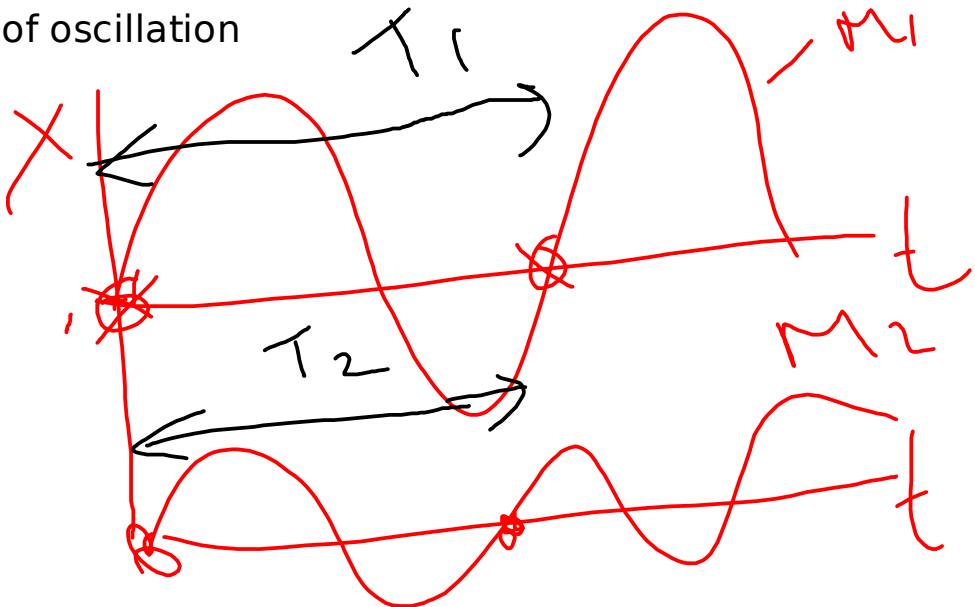
Procedures : -1. You need to obtain the necessary equation by energy method

2. Then you need to do numerical integration for each case and you will obtain position.

3. SInce you have position you can determine the time period of oscillation

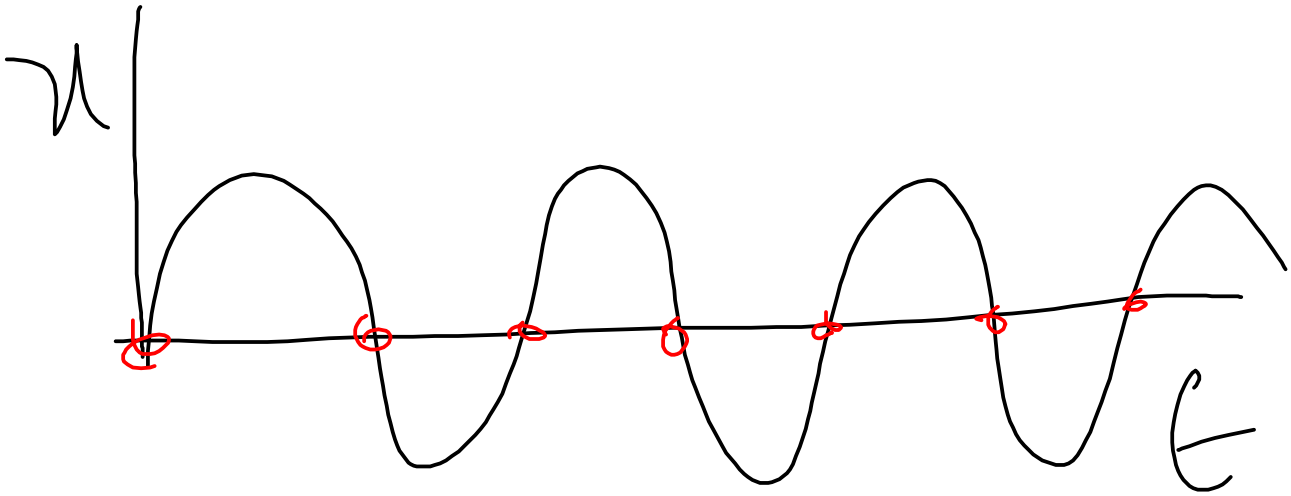
Technique to obtain period of oscillation





Depending on the lenght ratio and mass ratio value
You can have three scenario

1. Smooth priodic trajectory which has constant period oscillation



2. Irregular period of oscillation (in that case take first period of oscillation)