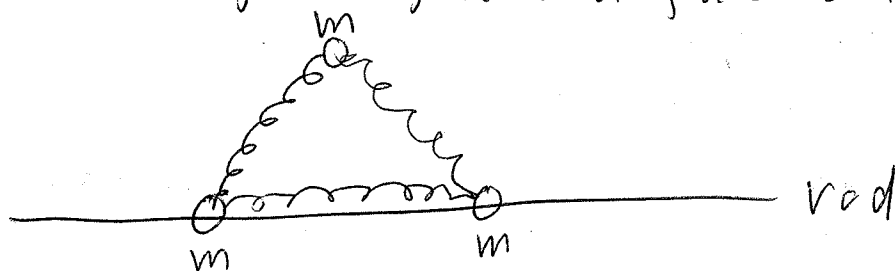3d) cont) Hint: to solve a differential equation of the form you're likely to encounter, try a solution of the form

$$y(t) = A e^{B t^a},$$ and find the value of a that solves the equation approximately at large time.

B4) Three identical masses are connected by identical springs. Two of the masses ~~are skewered on a~~ slide (~~do~~ need I say frictionlessly?) on a straight rigid rod, as shown:

The equilibrium length of the springs is l_0, and their spring constant is k.

~~a) Find all the f~~

a) Write down the Lagrangian for this system.

b) Find its fixed points.

c) Find the eigenfrequencies / growth-decay rates for small motions around these fixed points (hint: use symmetry arguments to guess the normal modes). Which fixed points are stable, and which are unstable?