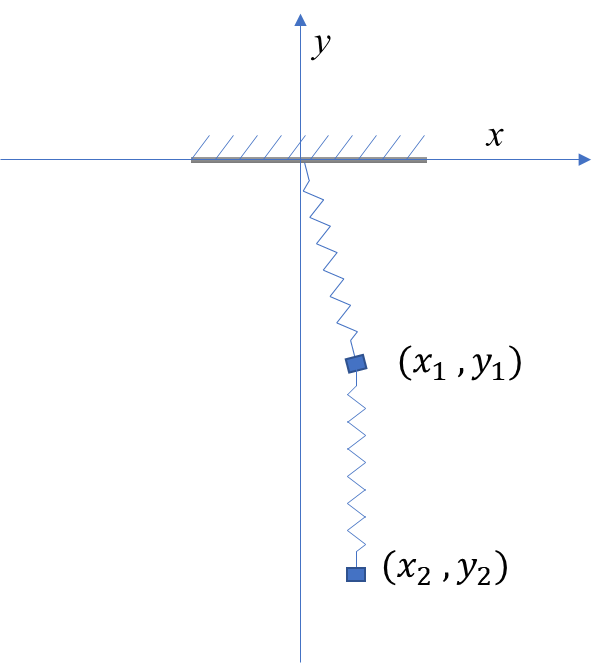
# *Spring Double Pendulum*



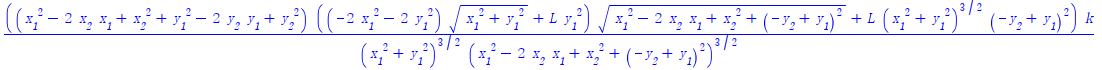
Dynamic Equations

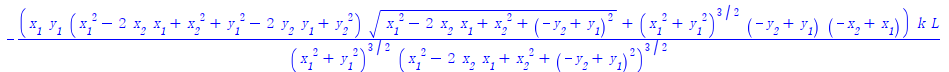
Let

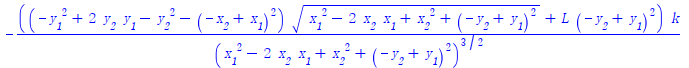
Let all

1 2 3 4 5 6 7 8

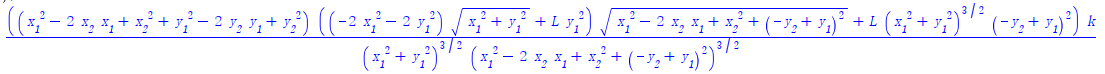
Jacobi matrix

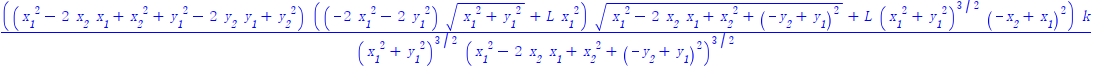


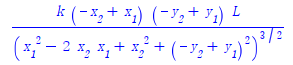


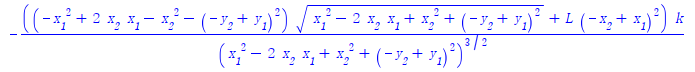


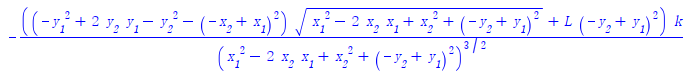




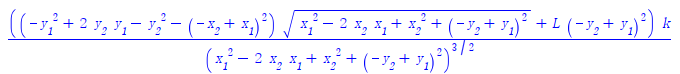


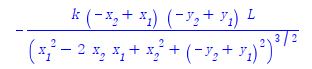


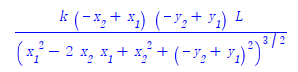




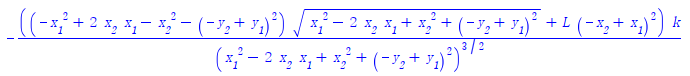


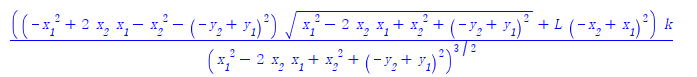












Let k=1, g=9.8, l=1

Initially

Calculated Equilibrium

Jacobi matrix is

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| -1.86 | 0 | 0.907 | 0 | 0 | 0 | 0 | 0 |
| 0 | -2 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0.907 | 0 | -0.91 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | -1 | 0 | 0 | 0 | 0 |

Eigenvalues are

-4.27115083e-17+0.61803399j

-4.27115083e-17-0.61803399j

1.05753171e-16+1.61803399j

1.05753171e-16-1.61803399j

1.61410528e-16+1.5516723j

1.61410528e-16-1.5516723j

-1.41036385e-17+0.59881901j

-1.41036385e-17-0.59881901j