Home task 4: Dynamics

Task:

1. Derive dynamic model for your robot model using the Euler-Lagrange approach.

$$M(q)\,\ddot{q} + C(q, \dot{q})\,\dot{q} + g(q) = \tau$$

You can use the symbolic toolbox in Matlab or Symby in python but it is not obligatory

2. Drive the robot joints between $[0, \pi]$ and plot joint torques.
3. Derive the dynamic model for your robot model using Newton-Euler approach.
4. Do the same in task 2.

References:

You can find useful information about matrix approach in chapter 7 about dynamics in "1) B. Siciliano, L. Sciavicco, L. Villani, G.Oriolo, "Robotics: Modelling, Planning and Control", 3rd Edition, Springer, 2009".

Submission:

- A report containing your full derivation of the dynamic model
- Code implementation for calculating $M(q)$, $C(q, \dot{q})$, $g(q)$

Bonus:

Drive your robot joint using a point-to-point trajectory plan.

1. Drive the robot using a trapezoidal profile.
2. Drive the robot using a polynomial profile.
3. Plot torques in both cases.