Home Task 3: Trajectory planning

Task:

1) Calculate and plot position, velocity, and acceleration trajectories of driving your robot model from configuration q_0 to configuration q_f in joint space.
2) Synchronize your 6 joints to start and end motion at the same time.
3) Redefine synchronized trajectories for numerical control
4) Calculate propagated error in end-effector position.
5) Drive your robot model between 3 consequent points. (solve polynomial)
6) Perform trajectory junction.

Bonus task:

- Solve tasks 5 and 6 for a straight line. Which means you will need to calculate inverse kinematics on 3-4 points (position with fixing orientation) along some line and then solve trajectory.
- Solve polynomial constraining null value for initial and final acceleration in task 1 and plot the results.

References:

You can refer to chapter 4 about trajectory planning in "1) B. Siciliano, L. Sciavicco, L. Villani, G.Oriolo, "Robotics: Modelling, Planning and Control", 3rd Edition, Springer, 2009".

Submission:

- Show your solution in steps
- Submit your code in python/Matlab
- Write meaningful comments in your code
- Make sure to highlight your implementation results when running the code