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Midterm

- Next Wednesday
- We get a cheat sheet + Newton-Euler Sheet
- Everything through PS 5
  - Dynamic Modeling
    - We get robot eqns, & we should put that in an eqn
    - Be able to put in matrix form + identify nature of various terms
    - Be able to incorporate Actuator + Transmission Dynamics (PS #3)
      - Transmission Jacobian from a picture
        - How do we account for friction?
  - Impedance Matching PS #4 $N = \sqrt{\frac{I}{J}}$
  - Feedback Control PS #4
    - 1st + 2nd order step response
    - Root Locus PD & PID design
      - Sketch R.L. by hand + apply ζ & magnitude conditions
  - Coordinated Motion Control
    - Decentralized Control
      - PID
      - Nonlinear Feedback Comp
      - Feedforward Compensation
    - Centralized Control
      - Inverse Dynamics Control

For all centralized motion controllers
- Be able to write control law
- Identify elements of block diagram & control law as they relate to dynamics

$\tau = ?$ → On a block diagram, write it out

Closed loop poles start @ open loop poles, end @ open loop zeros and/or infinity