MEEG 311 – Lecture 21
Vibration and Control

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Goals:

- Root locus: How the closed-loop poles move in the complex plane as we change a parameter (e.g. a controller gain)

- Basic definitions: Open-loop (loop gain) vs. closed-loop transfer function

- Equivalent characterizations of closed-loop poles:
  - Roots of the denominator of the closed-loop transfer function (characteristic equation)
  - Points in the complex plane where the open-loop transfer function is equal to -1 (equivalently, the magnitude is 1 and the angle is an odd multiple of 180)

- Gain and angle conditions: The closed-loop poles (poles of the closed-loop transfer function) coincide with the open-loop poles (poles of the open-loop transfer function) ONLY when the gain (parameter) is zero