HW 3:

Due Friday 9th

Pb 9.35
Pb 9.13
Pb 9.32
Pb 9.43
Pb 9.55

Q: 

A B C D
To maintain the ability to deliver power following changes in the operating point.

Transient Stability:

- Disturbance
- Fault (3rd, 6th, 11th)
- Generator trips
- Large load changes
Transient Stability

\[ P_{12} = \frac{N_{11} V_{21}}{V_{12}} \sin (\delta) \]

First Swing Stability

to fault cleared

\( \Rightarrow \) unstable.

\( \Rightarrow \) stable.
Definition:

Ability of the system to reach a valid steady-state following a disturbance.

Example:

\[ I_A, V_1 \rightarrow P_{elec} = 0 \]
Classification of Stability:

- Small signal stability
- Transient response to small changes
- Dynamic stability program
- Linearize your system around an operating point
- Look at small disturbances

Midterm:
- Seconds up to 20s
- Several minutes
- Dynamic response with control interactions

Longterm (steady state):
- Hours, minutes, or longer
- Power flow programs
- Contingency analysis (N-1) secure