1. Consider the two-bus system shown in Fig. 11. The two generators and transformers are assumed of equal rating – 300 MVA – which is the 3-phase base power for all pu unit data given in what follows.

- Line has series reactance of 0.20 pu
- Pre-fault bus voltage magnitudes are both 1.0 pu.
- The generators are sharing the total real power load equally.
- Assume that the prefault bus voltage at bus 1 is the reference (i.e., has 0 degree phase angle).
- The transformers both have leakage reactance of 0.12 pu.
- Both generators have subtransient reactance of 0.1 pu.

a. For the pre-fault conditions, compute the pu real power consumed by each load, the pu real power delivered by each generator, the power angle $\delta$, and the pu reactive power delivered by each generator.

b. Compute the prefault currents into each load.

c. Compute the fault current for a symmetric three-phase fault occurs on bus 1, with fault impedance $Z_f=0$.

d. Compare the fault current computed in (c) with the pre-fault load currents computed in (b).

![Fig. 11](image-url)
2. The one-line diagram of a three-bus power system is shown in Fig. 12. Each generator is represented by an emf behind the transient reactance. All impedances are expressed in pu on a common 100 MVA base. Determine the fault current, the bus voltages, and the line currents during the fault when a balanced three-phase fault with fault impedance $Z_f = j0.16$ pu occurs on bus 1. Assume that all pre-fault bus voltages are 1.0 pu.

![Diagram](image-url)