Homework #5: Due on Tuesday, April 3th Before the Class

Readings: 6.1-6.6; 6.8-6.11

The 5-bus power system is shown in below Figure 5.1. The voltage at bus one is fixed at 1.06 (the angle is 0). Buses 3-5 are load buses and their complex power consumptions are shown in the figure. Bus 2 is connected with one generator and one load, and the net complex power (i.e., complex power of load – complex power of generator) is −(0.2 + j0.2). All values are given as per unit values with respect to the same base.

Provide the detailed procedure for solve the power flow problem:

5.1 The first iteration of the GS method
5.2 The first iteration of the NR method
5.3 The first iteration of the decoupled method
5.4 Solve the DC power flow problem.

Figure 5.1 Figure for Problems 5.1-5.4