

HW8

1. You previously did a short circuit calculation on the system in Figure 3.13 Page 79 of text. The problem statement is repeated below.

Assume each generator has a subtransient impedance of $j 0.1$ pu on system base.

Develop incidence matrix

Calculate the admittance matrix Y using $C^T y_{\text{prim}} C$; check using rules

For a three phase fault at bus 5, find fault current, all voltages, and all branch currents

Redo the fault calculation as follows.

- a. Compute the LDU factors
- b. Solve $YV = I$ where I is a vector of zeros except for element 5 which is a 1. I claim that the solution V is the fifth column of $Z = Y^{-1}$. Am I right?
- c. Since Y and Z are symmetric, complete the fault calculation as before using the elements of Z calculated in part c.

2. Text problem 8 using Gauss Seidel and also using Conjugate Gradient