Homework #11  
(Not to be collected)  
(It will reviewed during S23)  

1) The attached Mathcad sheet “HW11 Solution.xmcd” is a modification of the S21c handout such that the bus 1 voltage is 1.00 instead of 1.04 and corrects errors in the Jacobians. The HW11 handout contains one swing bus and two load buses.

2) The “HW11 Solution.xmcd” sheet displays the Jacobian matrix before (JCBN_FP) and after (JCBN_S) the N-R solution and the admittance bus for the system, Y.

3) Enter the 3 bus power system described in “HW11 Solution.xmcd” into Power World’s Simulator.

4) Obtain a power flow solution using Simulator. Check to make sure that the bus voltages agree with “HW11 Solution.xmcd”. Obtain and record Ybus and the Jacobian matrix (Case Information Ribbon Tab; Model Explorer Tools Ribbon Group; Explore tab; Solution Details; Ybus or Power Flow Jacobian).

5) Reset the case to a flat voltage profile of 1.00 pu. (Tools Ribbon Tab; Power Flow Tools Ribbon Group; Solve; Reset to a Flat Start). Obtain and record Ybus and the Jacobian matrix.

6) Compare the “HW11 Solution.xmcd” Y with the Simulator Ybus.

7) Compare the “HW11 Solution.xmcd” and Simulator pre -solution (flat voltage profile) Jacobians.

8) Compare the “HW11 Solution.xmcd” and Simulator post -solution Jacobians.