**Student** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Score** \_\_\_\_/20

|  |  |  |  |
| --- | --- | --- | --- |
| (1 pt. each except where indicated) | | | |
| **Truss Matrix Problem** | Setup Table | 1. Set up Table 1 (A matrix and b vector) included completed (by hand) |  |
| 1. b vector is correct |  |
| 1. Force coefficient matrix A is correct |  |
| Method | 4. & 5. Matrix solution method identified and MATLAB code shown (2 pts.) |  |
|  |
| Force Vector Results | 1. MATLAB execution result in a 13 element force vector (included in solution) |  |
| 1. Results also presented in formatted table |  |
| 1. Table includes the forces, the member number for each and the units |  |
| 9. & 10. Forces are completely correct (2 pts.) |  |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Script:** Magnitude and Angle of a Complex # | Hand Calc. | 1. Hand calculation of the magnitude, and angle in degrees included and correct |  |
| Comments | 1. Intro. section with the filename, programmer name, date and purpose |  |
| 1. A variable definition section that describes all variables, |  |
| Code | 1. Script included with Required Comments – completely filling out the comment template or providing equivalent information (ID, purpose, variable list & logic) |  |
| 1. Interactive input of a complex number correctly implemented |  |
| 1. Code includes calculation of the magnitude |  |
| 1. Code includes calculation of angle in degrees |  |
| 1. Output and format: program displays magnitude and angle in degrees. Each output is labeled clearly using the disp() function.   **All other echo printing suppressed**. |  |
| Test | 1. Execution produces a magnitude and the angle in degrees |  |
| 1. Output correct for test case used. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Extra Credit:** Phasor Circuit Calculations | Cartesian | 1. Current(I) – Correct MATLAB calculation of Cartesian form |  |
| 1. Resistor Voltage (VR) - Correct MATLAB calculation of Cartesian form |  |
| 1. Inductor Voltage (VL) - Correct MATLAB calculation of Cartesian form |  |
| 1. Correct conversion of above to polar magnitude & angle | |  |