Print Your Name

The Last Four Digits of Your OSU I.D. number:
**Problem 1:** Consider a 3-φ distribution system as shown below:

Compute the following:
1) The source voltage $V_S$, if $V_R$ is to be maintained at 2.2 kV.
2) The source current and power factor at the source.
3) The total complex power supplied by the source.
4) How much reactive power should be connected to the source bus for obtaining unity power factor at the source bus?
5) Write Matlab code to solve the above problems. Please submit the Matlab code and the results.

**Problem 2:** A balanced three-phase, three-wire feeder has three balanced loads as shown:

Load 1 are three lamps, each rated 100 watts at 120 volts. Load 2 are three inductors, each having an inductance of 0.1 Henry. Load 3 are three capacitors, each having a capacitance of 100 $\mu$F.

The line-to-line voltage on the feeder is 220 volts, and the frequency is 60 Hz. Find the source current in the feeder lines and the power delivered by the source.

**Problem 3:** Solve problem A-4 (textbook, page 673)