(1)

A three-phase Y-Δ transformer is rated 225-kV:24-kV (line to line), 400 MVA and has a single-phase equivalent series reactance of 6.08Ω (as referred to its high-voltage terminals).

The transformer is supplying a load of 375 MVA at 0.89 power factor leading at a voltage of 24 kV (line to line) on its low-voltage side. It is supplied from a feeder whose impedance is $0.17 + j2.2\Omega$ (connected to its high-voltage terminals).

For these conditions, calculate

(a) the line-to-line voltage at the high-voltage terminals of the transformer

(b) the line-to-line voltage at the sending end of the feeder.