Seminar - 10th week - results

1. a) $\mathbf{S}$ = 0.000 01 + 0.01j VA, P = 10 µW, Q=10 mvar, S = 10.1 mVA.
    b) $\mathbf{S}$ = 10 + 0.000 715j VA, P = 10 W, Q=715 µvar, S = 10 VA.

2. P = 2.5 W, Q = −25 var, S = 25.1247 VA.

3. The load is inductive, the angle is 0.7954 rad, or 45.573° (and S = 14 286 VA, Q = 10 202 var).

4. I = 208.33 A, and power loss in the line is P = 4.34 kW. After pf compensation current falls on I = 131.58 A and power loss is just P = 1.73 kW.

5. a) $\mathbf{S}$ = 105.83 + 105.83j, P = 105.83 W, Q = 105.83 var.
    b) $\mathbf{Z}$ = 500.14 + 500.14j. R = 500.14 Ω, L = 1.592 H.
    c) P_R = 21.16 W, Q_L = 6.65 var.
    d) S = 169.64 VA.

6. $\mathbf{V}$ = 262.46 − 12.075j = $262.73\underline{/-0.046}$.