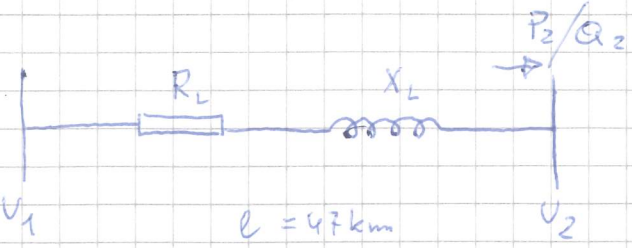
3.2 *



3.2

$U_2 = ?$ om $U_1 = 51$ kV

Linjen:

försumma tvärsp.f.

$R_L = r \cdot \ell = 0{,}18 \cdot 47 = 8{,}46$ Ω/fas

$X_L = x \cdot \ell = 0{,}30 \cdot 47 = 14{,}10$ Ω/fas

Belastningen:

P MW	cos φ	Q MVAr
2,2	0,9	1,07
1,7	0,8	1,28
0,6	0,6 kap	-0,8

$P_2 = 4{,}5$ MW $\qquad Q_2 = 1{,}55$ MVAr

$$U_1 = U_2 + \frac{R_L P_2 + X_L Q_2}{U_2} \; ; \; U_2^2 - U_1 U_2 + R_L P_2 + X_L Q_2 = 0$$

$$R_L P_2 + X_L Q_2 = 8{,}46 \cdot 4{,}5 + 14{,}1 \cdot 1{,}55 = 59{,}9$$

$$U_2^2 - 51 U_2 + 59{,}9 = 0$$

$$U_2 = 25{,}5 \pm \sqrt{25{,}5^2 - 59{,}9} = 25{,}5 \pm 24{,}3$$

$U_2 = 49{,}8$ kV $\qquad (\Delta U = 25{,}5 - 24{,}3 = 1{,}2$ kV)