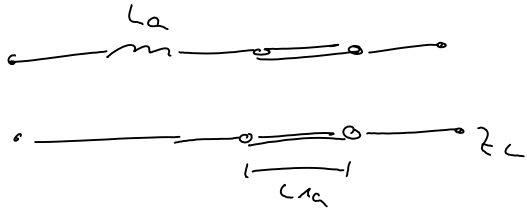
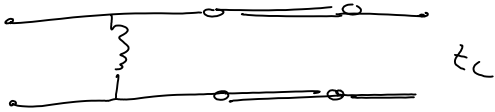


Aufgabe 41.1

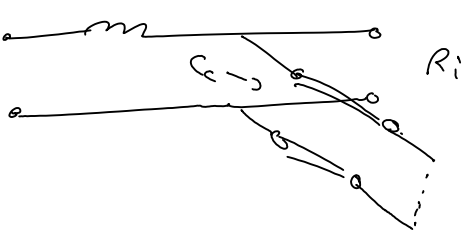
1a)



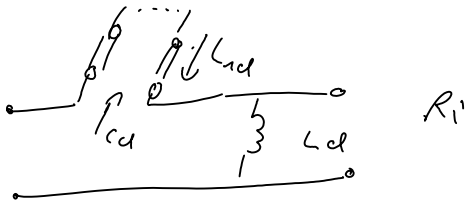
b)



c)



d)

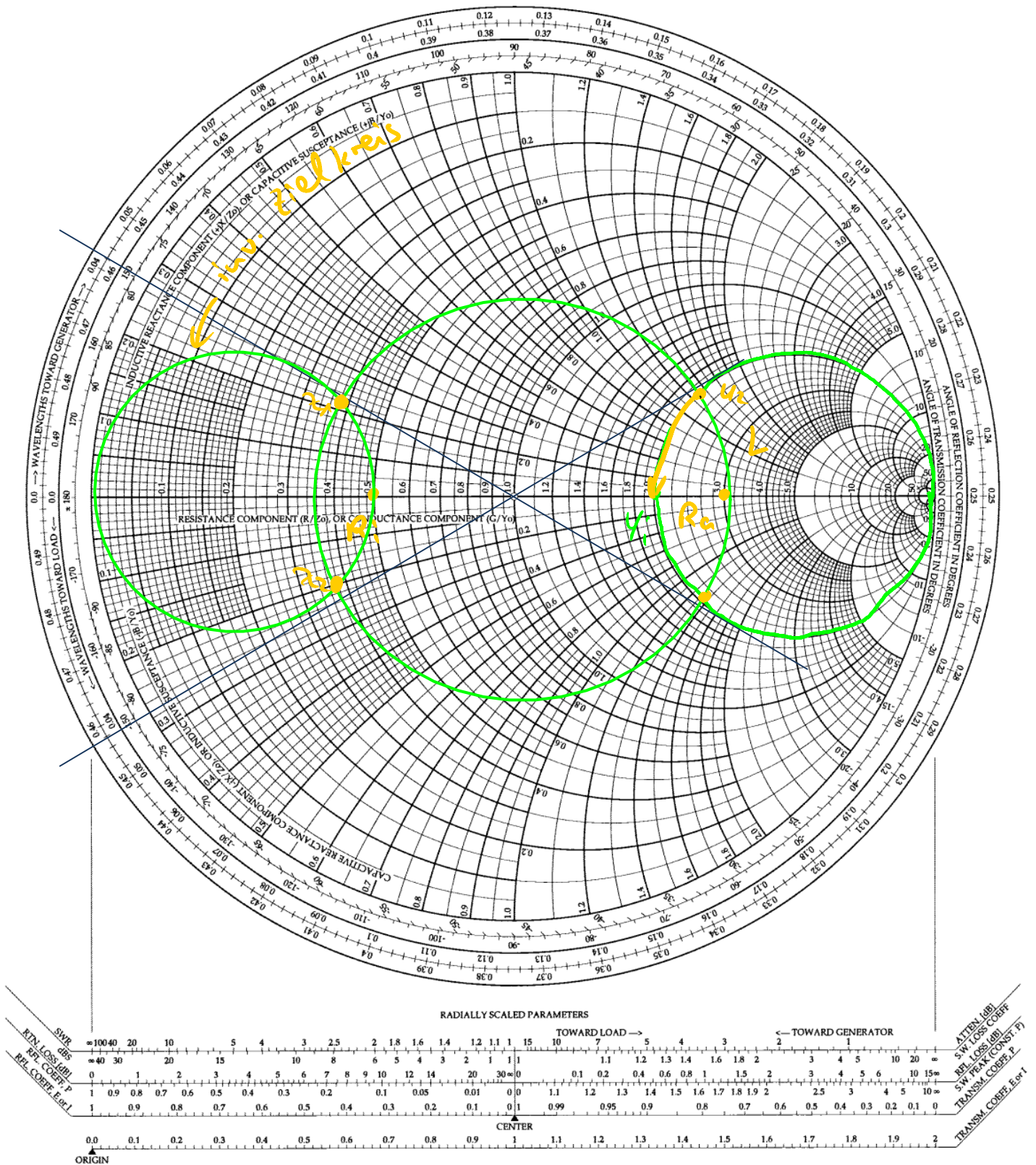
b)

$$\frac{R_e}{z_L} = 3$$

$$\frac{R_i}{z_L} = \frac{1}{2} = \frac{1}{4}$$

The Complete Smith Chart

Black Magic Design



$$\frac{L}{\lambda} = (0,48 - 0,25) = 0,23$$

$$\frac{z_L}{j\omega L_b} = -j 1,3$$

$$\frac{j\omega L_b}{z_L} = j 0,77$$

b) Startpunkt $\frac{R_c}{z_L} = 3$

Zielpunkt $\frac{R_1}{z_L} = 0,5$

inw. Zielpunkt $\frac{y_1}{y_L} = 2$

Zielkreis $y = 2 + j6$

inw. Zielkreis (Z-Ebene)

Startpunkt über Leitwert transformieren

$$r_e(z_e) = r_a(z_a) e^{-j2\beta L_b} \Rightarrow \text{Schnittpunkte}$$

(3a) und (3b) mit inw. Zielkreis

Z-Y: inw. Schnittpunkt $4a$ und $4b$

$\Rightarrow$ nur $4a$ kann durch Addition eines

neg. Imaginärteils ($y_L = -j \frac{1}{\omega L_b}$)

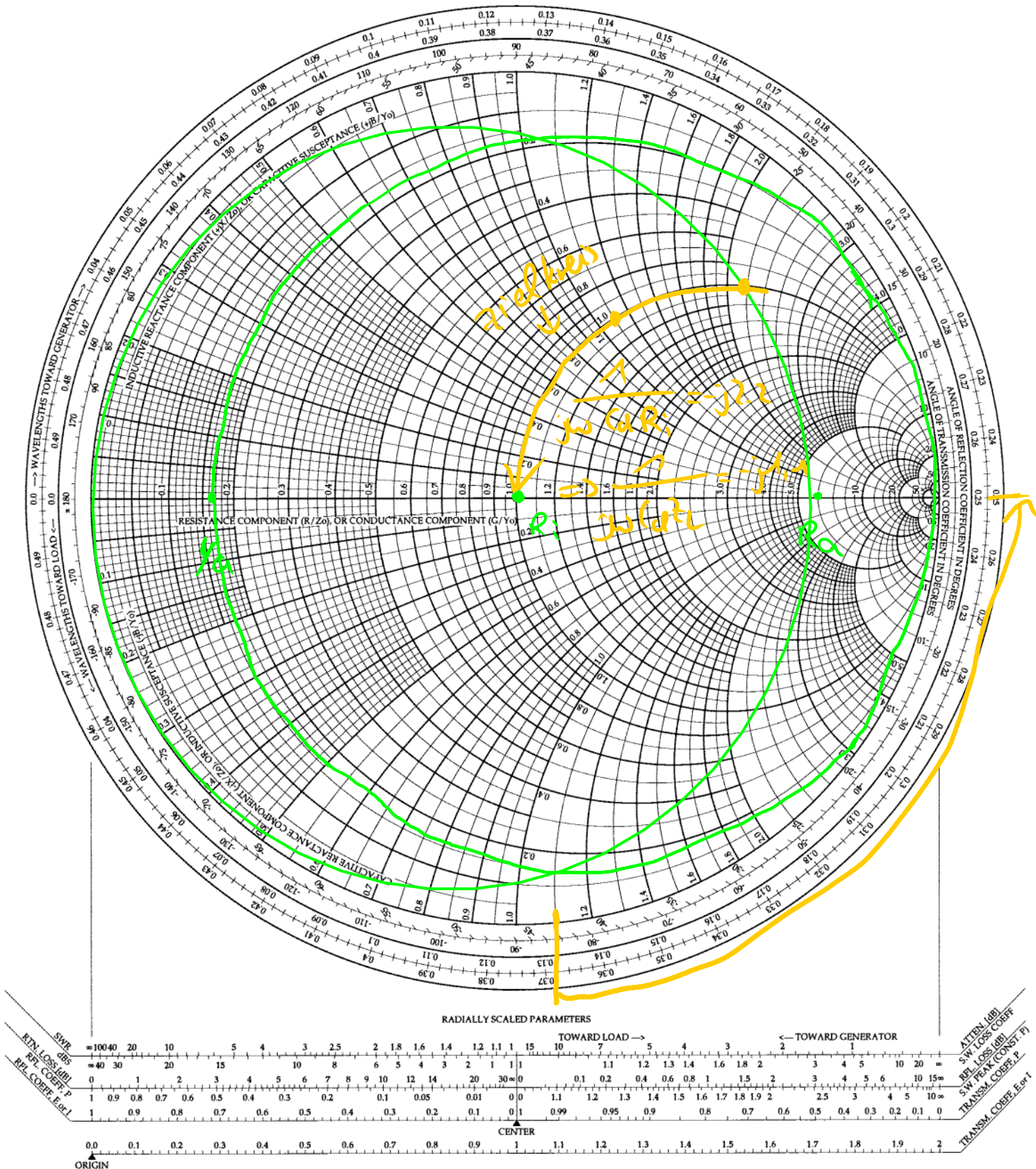
in den inw. Zielpunkt überführt werden

$$L_{nb} = (0,46 - 0,25)\lambda = 0,21 \lambda$$

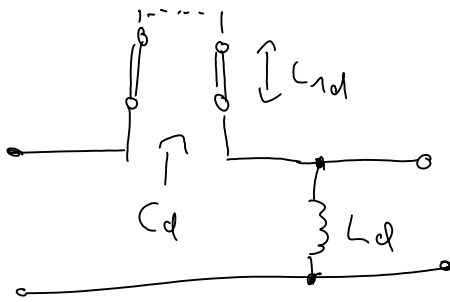
$$\frac{z_L}{j\omega L_b} = -j 1,3 \quad \frac{j\omega L_b}{z_L} = j \cdot 0,77$$

The Complete Smith Chart

Black Magic Design



$$|R_i = 50 \Omega| = 7 \Omega$$



$$\boxed{R_i = 50 \Omega} = Z_L$$

Leitung offen:

$$\frac{L}{\lambda} = (0,38 - 0,25)$$

$$= 0,12$$

$$\frac{R_i}{Z_L} = 1$$

$$\frac{R_a}{Z_L} = 6$$

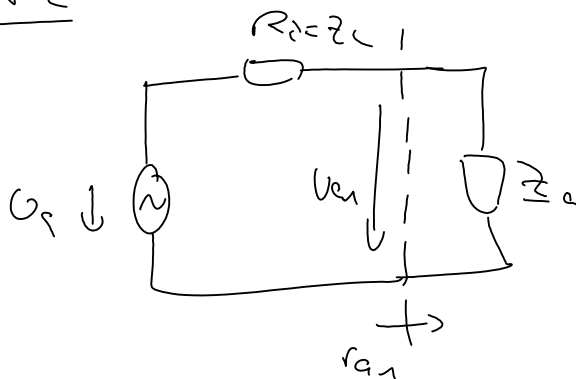
$$\frac{Z_L}{R_a} = \frac{1}{6}$$

$$d) \frac{R_i}{j\omega L_d} = -j 0,35 \Rightarrow \frac{j\omega L_d}{R_i} = j \cdot 2,857$$

Stichleitung kurzgeschlossen: $L_1 = 0,367 \lambda$

" offen $L_1 = (0,367 - 0,25) \lambda$
 $= 0,117 \lambda$

A.2



$$|U_{a1}| = \left| \frac{Z_a}{Z_L + Z_a} \right| |U_g|$$

$$= \frac{|U_g|}{2} \cdot |1 + \epsilon_{a,1}|$$

mit $\underline{v_{a1}} = \frac{\underline{z_a} - \underline{z_c}}{\underline{z_a} + \underline{z_c}}$

