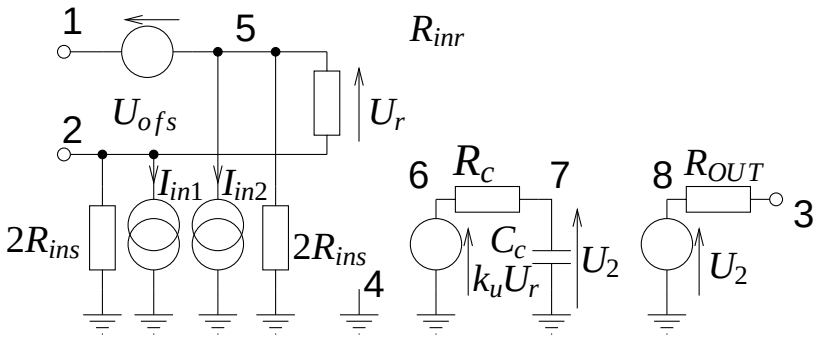
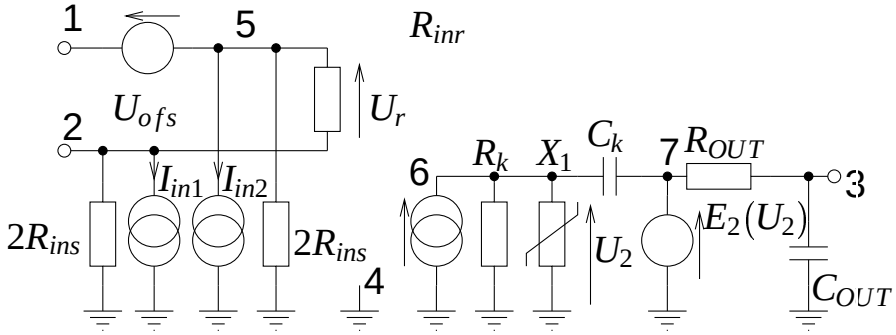
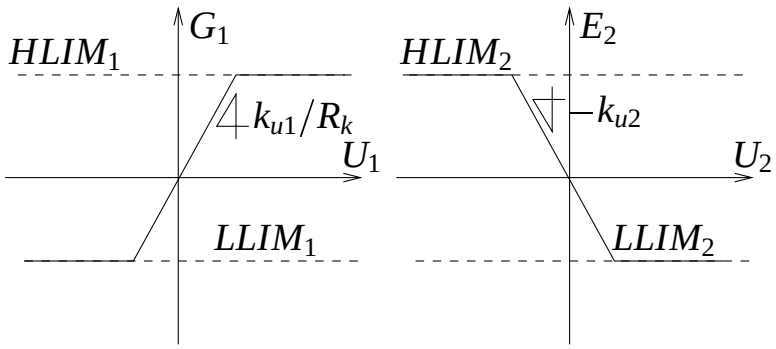
Model liniowy



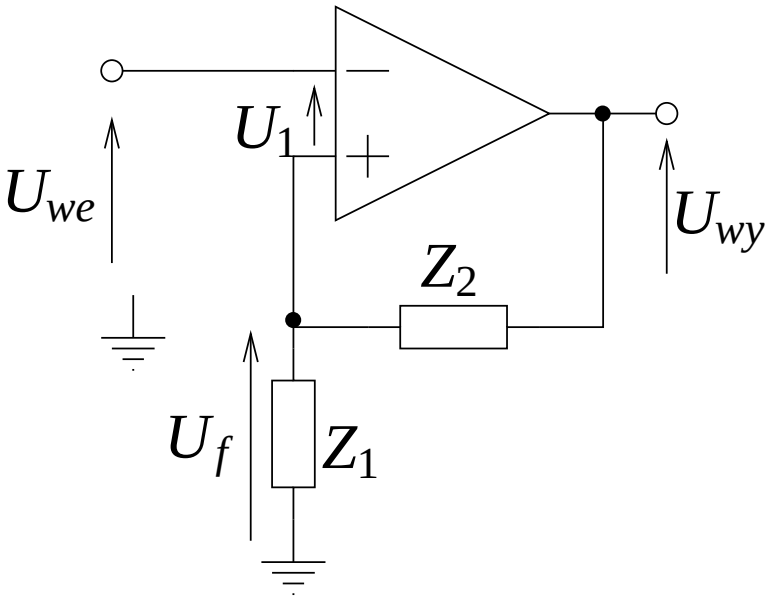
Model nieliniowy



$$I_1 = G_1(U_1)$$



Wzmacniacz nieodwracający



$$U_{wy} = k_u \cdot U_1$$

$$U_f = U_{wy}\frac{Z_1}{Z_1+Z_2}$$

$$U_1 = U_{we} - U_f$$

$$U_{wy} = k_u\left(U_{we} - U_{wy}\frac{Z_1}{Z_2+Z_1}\right)$$

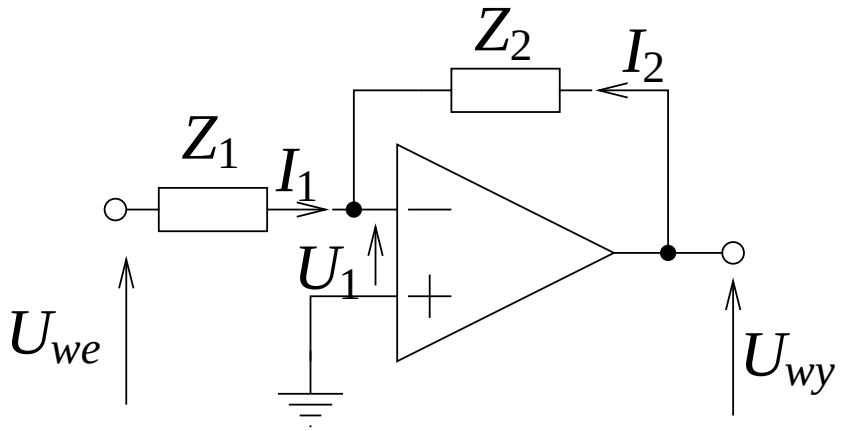
$$U_{wy}\left(1 + k_u\frac{Z_1}{Z_2+Z_1}\right) = U_{we}k_u$$

$$U_{wy}\left(\frac{1}{k_u} + \frac{Z_1}{Z_2+Z_1}\right) = U_{we}$$

$$k_{uf} = \frac{U_{wy}}{U_{we}} = -\frac{1}{1/k_u + \frac{Z_1}{Z_2+Z_1}}$$

dla $k_u >> 1$ $k_{uf} = \frac{Z_1+Z_2}{Z_1}$

Wzmacniacz odwracający



$$U_{wy} = -k_u \cdot U_1$$

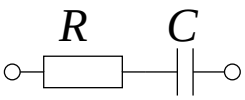
$$U_1 = U_{we}\frac{Z_2}{Z_2+Z_1} + U_{wy}\frac{Z_1}{Z_2+Z_1}$$

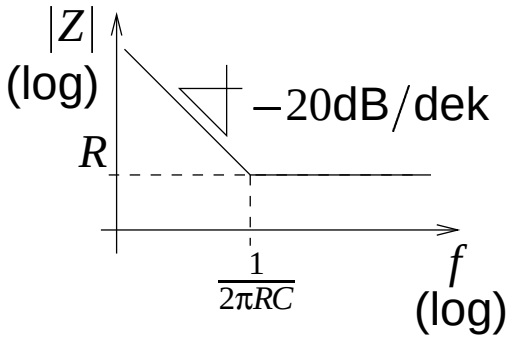
$$U_{wy}\left(\frac{-1}{k_u} - \frac{Z_1}{Z_2+Z_1}\right) = U_{we}\frac{Z_2}{Z_2+Z_1}$$

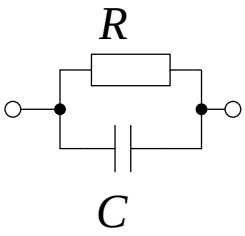
$$U_{wy}\left(-Z_2 - Z_1 - k_u Z_1\right) = U_{we} k_u Z_2$$

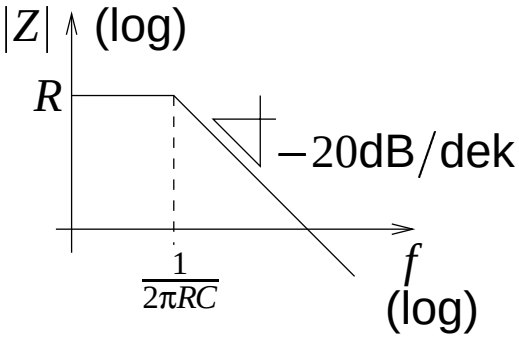
$$k_{uf} = \frac{U_{wy}}{U_{we}} = -\frac{Z_2}{Z_1+(Z_2+Z_1)/k_u}$$

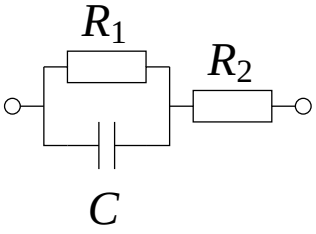
dla $k_u >> 1$ $k_{uf} = -\frac{Z_2}{Z_1}$

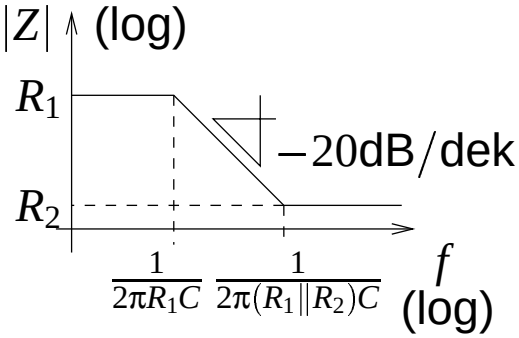

R
C


|Z|
(log)
−20dB/dek
R
1/2πRC
f
(log)


R
C


|Z| (log)
R
−20dB/dek
1/2πRC
f
(log)


R1
R2
C


|Z| (log)
R1
R2
−20dB/dek
1/2πR1C
1/2π(R1||R2)C
f
(log)