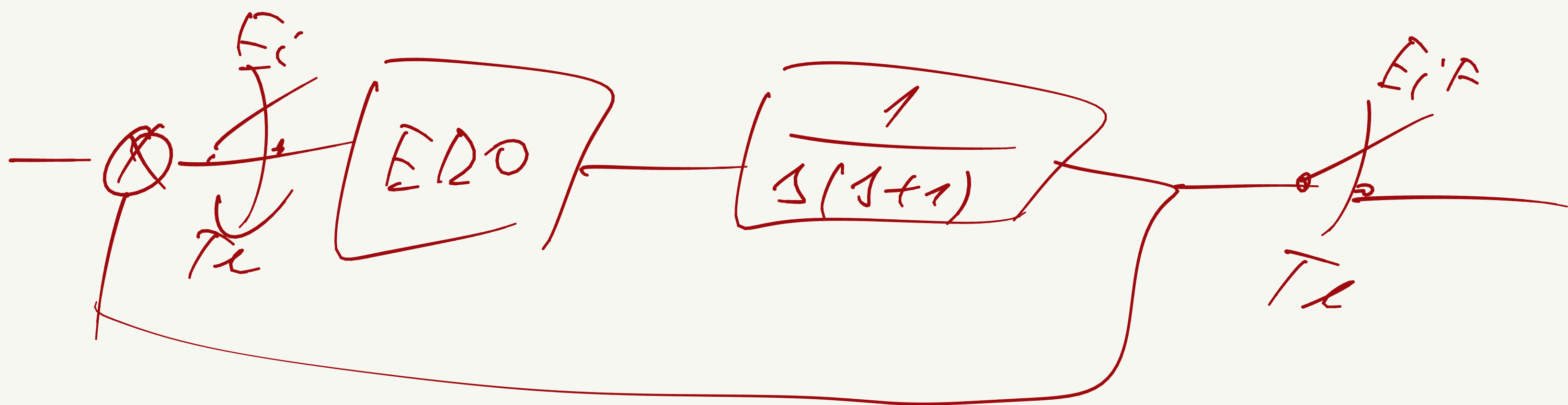


$$G(z) = \frac{1 - z^{-0,1}}{z - z^{-0,1}} = 0,9$$



$$G(z) = z \left\{ \frac{1 - z^{-T_e}}{s} \cdot \frac{1}{s(s+1)} \right\} = (1 - z^{-1}) z \left\{ \frac{1}{s^2(s+1)} \right\}$$

$$= (1 - z^{-1}) z \left(\frac{C_1}{s^2} + \frac{C_2}{s} + \frac{C_3}{s+1} \right)$$

$$C_1 = 1$$

$$C_2 = -1$$

$$C_3 = 1$$

$$= (1 - z^{-1}) z \left\{ \frac{1}{s^2} + \frac{-1}{s} + \frac{1}{s+1} \right\}$$

$$\frac{z-1}{z} \left(\frac{T_e z}{(z-1)^2} - \frac{z}{(z-1)} + \frac{z}{z - z^{-T_e}} \right)$$

$$= \frac{1}{z-1} - 1 + \frac{z-1}{z-0,36}$$

$$= \frac{z-0,36 - (z-1)(z-0,36) + (z-1)(z-1)}{(z-1)(z-0,36)}$$

$$= \frac{0,36z + 0,28}{(z-1)(z-0,36)}$$

$$z = \frac{1 + \frac{T_k}{2} w}{1 - \frac{T_k}{2} w} = \frac{1 + 0,5w}{1 - 0,5w}$$

$$G(w) = \frac{\frac{0,36 + 0,18w}{1 - 0,5w} + 0,28}{\left(\frac{1 + 0,5w}{1 - 0,5w} - 1 \right) \left(\frac{1 + 0,5w}{1 - 0,5w} - 0,36 \right)}$$

$$= \frac{0,36(1 + 0,5w)^{(1-0,5)} + 0,28(1 - 0,5w)^2}{w(1 + 0,5w - 0,36 + 0,36 \cdot 0,5w)}$$

$$= \frac{(1 - 0,5w)[(0,36)(1 + 0,5w) + 0,28(1 - 0,5w)]}{w(0,68w + 0,64)}$$

$$= \frac{(1 - 0,5w)(0,36 + 0,18w + 0,28 - 0,14w)}{w(0,68w + 0,64)}$$

$$= \frac{(1-0,5w)(0,64+0,04w)}{w(0,64+0,68w)}$$

$$G(w) = \frac{(1-0,5w)(0,64+0,04w)}{w(0,64+0,68w)}$$

$$= \frac{\cancel{0,64}(1-0,5w)(1+0,06w)}{\cancel{0,64} \cdot w(1+1,06w)}$$

$$K=1 \Rightarrow h^{\text{dB}} = 0$$

$$G(jw) = \frac{(1-0,5jw)(1+0,06jw)(1+0,5jw)}{jw(1+1,06jw)(1+0,5jw)}$$

$$= \frac{(1+0,5)^2 w^2 / (1+0,06jw)}{jw(1+1,06jw)(1+0,5jw)}$$

$$\mathcal{L} = 1$$

$$\overline{T}_1 = 0,06$$

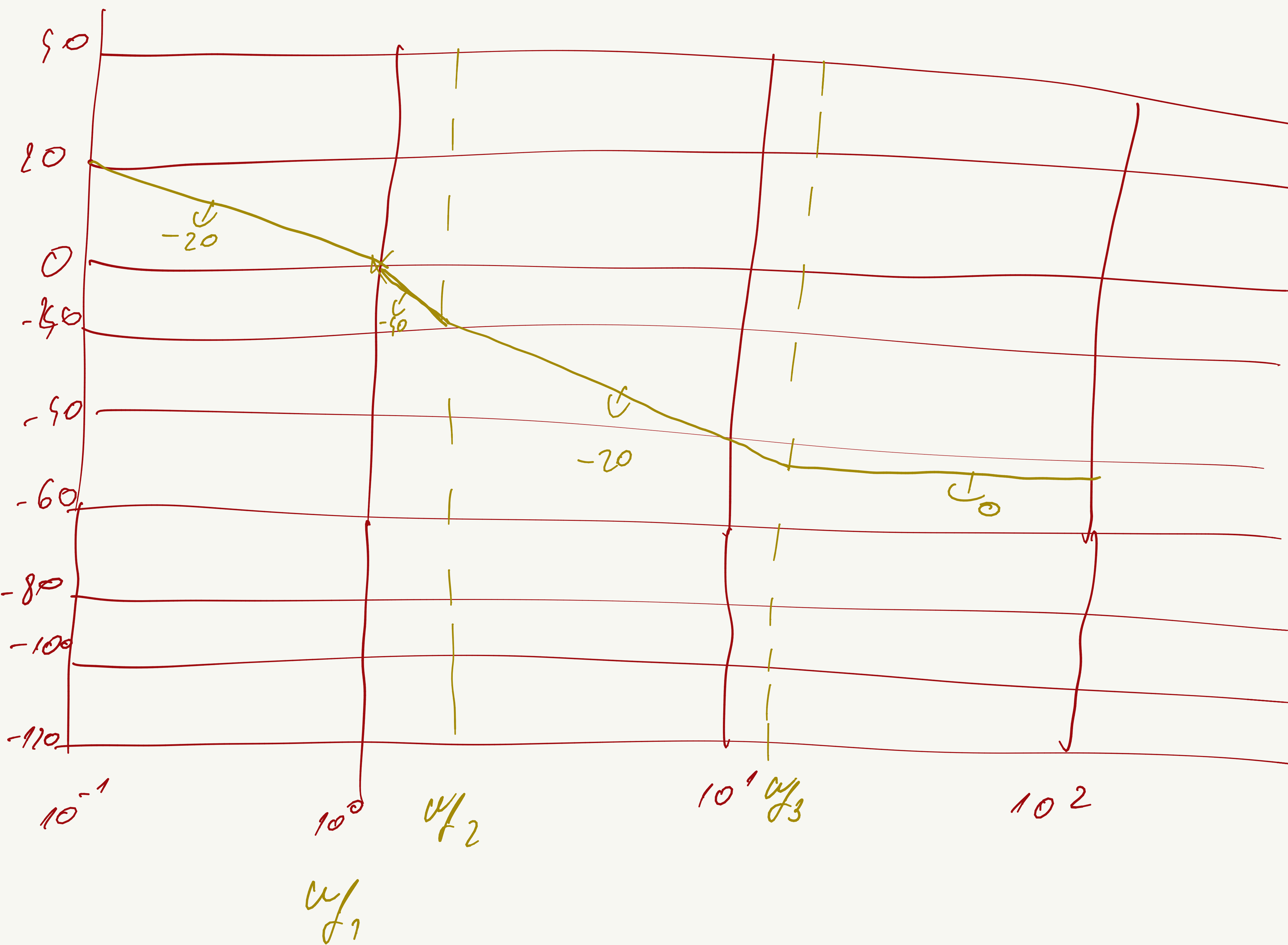
$$\overline{T}_2 = 0,5$$

$$\overline{T}_3 = 1,06$$

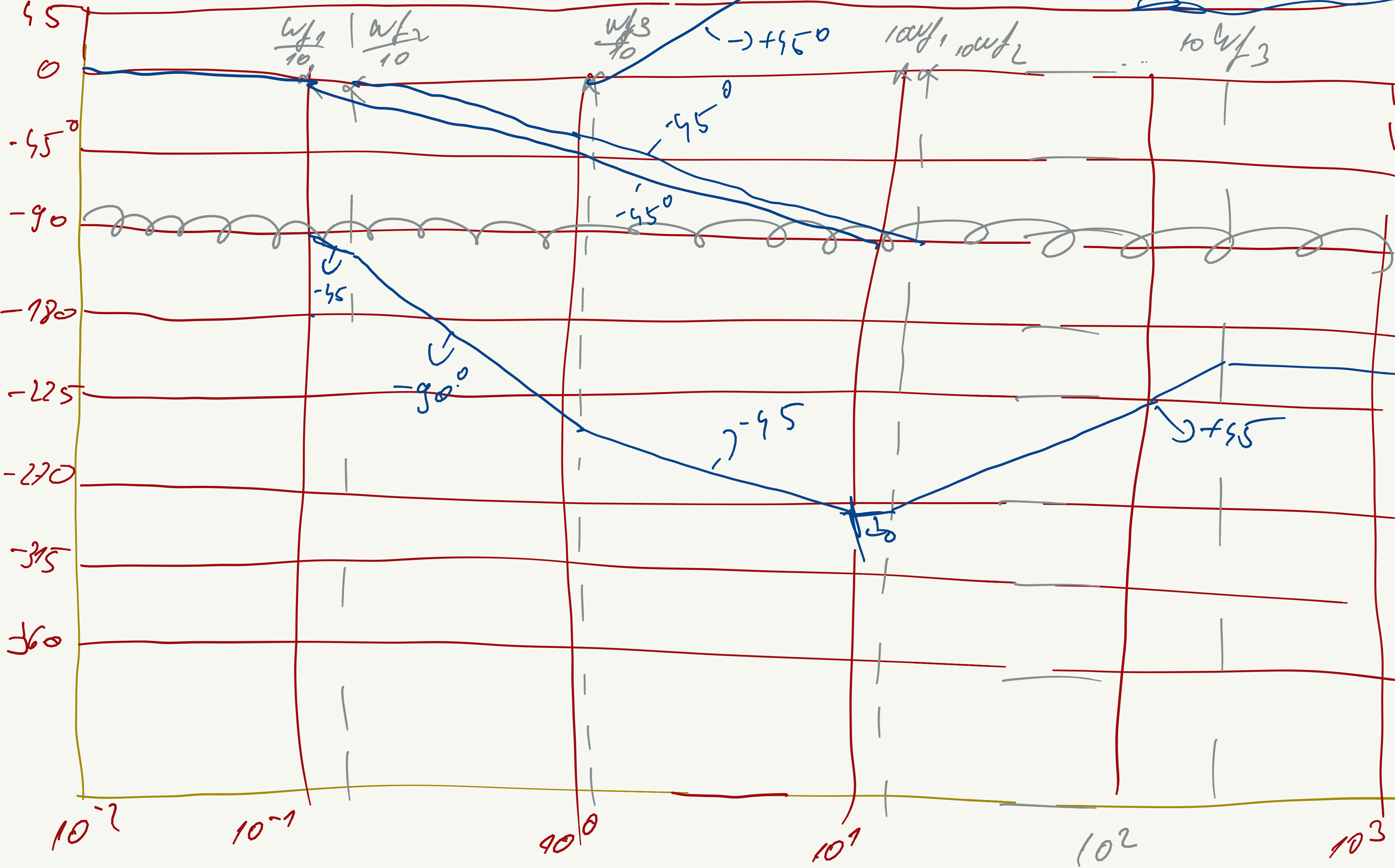
$$\omega_{f_1} = 1$$

$$\omega_{f_2} = 2$$

$$\omega_{f_3} = 16,6$$



$$-20 \text{ dB/dec} = -20$$



$$\frac{\omega_{f1}}{10} = 0.1 \quad 10\omega_{f1} = 10$$

$$\frac{\omega_{f2}}{10} = 0.2 \quad 10\omega_{f2} = 20$$

$$\frac{\omega_{f3}}{10} = 1.66 \quad 10\omega_{f3} = 16.6$$