

LS - Kursstufe Serie 61

Nr. 5) a) $f(t) = 17 \cdot e^{0,3t}$

$$34 = 17 \cdot e^{0,3t_v} \quad | : 17 \Rightarrow 2 = e^{0,3t_v} \quad | \ln$$

$$\ln(2) = 0,3 \cdot t_v \quad | : 0,3 \Rightarrow \underline{t_v = \frac{\ln(2)}{0,3} = \frac{\ln(2)}{k} \approx 2,31 \text{ s}}$$

b) $f(t) = 50 \cdot e^{-0,25 \cdot t}$

$$25 = 50 \cdot e^{-0,25 \cdot t_H} \quad | : 50 \Rightarrow \frac{1}{2} = e^{-0,25 \cdot t_H} \quad | \ln$$

$$\ln\left(\frac{1}{2}\right) = -0,25 \cdot t_H \quad | : (-0,25) \Rightarrow t_H = \frac{\ln\left(\frac{1}{2}\right)}{-0,25} = \frac{\overset{=0}{\ln(1)} - \ln(2)}{-0,25}$$

$$\underline{t_H = \frac{-\ln(2)}{-0,25} = \frac{-\ln(2)}{k} \approx 2,77 \text{ s}}$$

c) $f(t) = 56 \cdot 0,8^t = 56 \cdot e^{\ln(0,8) \cdot t} = 56 \cdot e^{-0,223 \cdot t}$

$$\frac{56}{2} = 56 \cdot e^{-0,223 \cdot t_H} \quad | : 56 \Rightarrow \frac{1}{2} = e^{-0,223 \cdot t_H} \quad | \ln$$

$$\ln\left(\frac{1}{2}\right) = -0,223 \cdot t_H \quad | : (-0,223) \Rightarrow \underline{t_H = \frac{-\ln(2)}{-0,223} = \frac{-\ln(2)}{k}}$$

$$\underline{t_H \approx + 3,11 \text{ s}}$$

d) $f(t) = 506 \cdot 4^t = 506 \cdot e^{\ln(4) \cdot t} = 506 \cdot e^{1,386 \cdot t}$

$$506 \cdot 2 = 506 \cdot e^{1,386 \cdot t_v} \quad | : 506 \Rightarrow 2 = e^{1,386 \cdot t_v} \quad | \ln$$

$$\ln(2) = 1,386 \cdot t_v \quad | : 1,386 \Rightarrow \underline{t_v = \frac{\ln(2)}{1,386} = \frac{\ln(2)}{k}}$$

$$\underline{t_v = \frac{\ln(2)}{\ln(4)} = 0,5 \text{ s}}$$