



Übertragungsfunktion:

$$G_{Vor1} = G_{r2} \times G_{r1} = 5 \times \frac{1}{1+10s} = \frac{5}{1+10s}$$

$$G_{Vor2} = G_{r3} \times G_{r2} = 5 \times \frac{1}{1+10s} = \frac{5}{1+10s}$$

$$G_{W1} = \frac{G_{Vor1}}{1 + G_{Vor1} \times G_{rück}} = \frac{\frac{5}{1+10s}}{1 + \frac{5}{1+10s} \times 1} = \frac{5}{5+1+10s} \quad \text{Norm.}$$

$$G_{W2} = \frac{G_{Vor2}}{1 + G_{Vor2} \times G_{rück}} = \frac{\frac{5}{1+10s}}{1 + \frac{5}{1+10s} \times 1} = \frac{5}{5+1+10s} \quad \text{Norm.}$$

$$G_{W1,2} = G_{W1} + G_{W2} = \frac{5}{5+1+10s} + \frac{5}{5+1+10s} = \frac{10}{5+1+10s}$$

$$G_{Wges} = G_{W1,2} \times G_{r1} = \frac{10}{5+1+10s} \times 10 = \frac{100}{5+1+10s}$$

$$G_{Yges} = \frac{\frac{100}{5+1+10s}}{1 + \frac{100}{5+1+10s} \times 1} = \frac{100}{100+5+1+10s} = \frac{100}{100+6+10s} = \frac{1}{1 + \frac{6}{100} + \frac{10s}{100}}$$

Statischer Endwert

$$y(s) = G_{Wges} \times W + G_{r2} \times Z = \frac{100}{100+6+10s} \times 1 = \frac{100}{106+10s}$$