Bsp.: $h(s) = \frac{1+10s}{s(1+2s)} = \frac{1}{s(2s+1)} + \frac{10}{(2s+1)}$

$$\Downarrow$$

$$\frac{1}{2}\,\frac{1}{s(s+\frac{1}{2})} + \frac{5}{s+1/2}$$

Bronstein 637 $\swarrow$ $\qquad$ $\Downarrow$ Bronstein 637

$$h(t) = \underbrace{\frac{1}{2}\cdot 2}_{1}\left(1-e^{-t/2}\right) \qquad 5\cdot e^{-t/2}$$

$$\rightarrow \underline{\underline{h(t) = 1 + 4e^{-t/2}}}$$

~~[illegible]~~

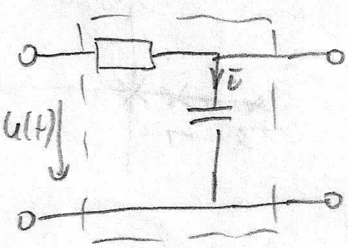
Bsp.: Lösung einer Differentialgleichung

$$\ddot{x} + 5\dot{x} + 6x = \varepsilon(t) \qquad \rightarrow f(0) = 0$$

$$s^2 X(s) + 5sX(s) + 6X(s) = \frac{1}{s}$$

$$(s^2+5s+6)X(s) = \frac{1}{s} \Rightarrow X(s) = \frac{1}{s(s^2+5s+6)}$$

Bsp: RC-Glied (vgl. Erstes Beispiel)



$$\dot{y}(t) + \frac{1}{\tau}y = \frac{1}{\tau}u$$

$$sY + \frac{1}{\tau}Y = \frac{1}{\tau}U$$

$$\Rightarrow Y\left(s+\frac{1}{\tau}\right) = \frac{1}{\tau}U \Rightarrow Y = \frac{\frac{1}{\tau}}{s+\frac{1}{\tau}}U = \frac{1}{1+s\tau}U$$

Ann: $u(t) = \varepsilon(t)\cdot U_0 \rightarrow U(s) = U_0\frac{1}{s}$

$$\Rightarrow Y(s) = \frac{U_0}{s(1+s\tau)} = \frac{U_0}{\tau}\,\frac{1}{s(s+\frac{1}{\tau})}$$

Bronstein 637

$$\Rightarrow \underline{\underline{y(t) = \frac{U_0}{\cancel{\tau}}\cdot\cancel{\tau}\left(1-e^{-\frac{t}{\tau}}\right)}}$$

q.e.d. #