

(b) Charakteristisches System

$$\gamma_1'(s) = a$$

$$\gamma_2'(s) = b$$

$$\gamma_3'(s) = c\gamma_3 + d$$

$$\gamma_1(s) = as + c_1$$

$$\gamma_2(s) = bs + c_2$$

$$\gamma_3(s) = c_3 e^{cs} + \frac{d}{c}$$

Mit den Anfangswerten ergibt sich

$$c_1 = t$$

$$c_2 = 0$$

$$c_3 + \frac{d}{c} = h(t)$$

$$x = as + t$$

$$y = bs$$

$$u = \left(h(t) + \frac{d}{c} \right) e^{cs} - \frac{d}{c}$$

Auflösen:

$$t = x - \frac{a}{b} y, \quad s = \frac{y}{b}$$

Einsetzen:

$$u = \left(h\left(x - \frac{a}{b} y\right) + \frac{d}{c} \right) e^{c \frac{y}{b}} - \frac{d}{c}$$