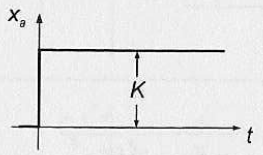
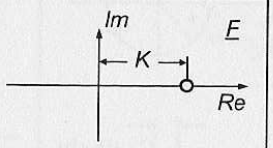
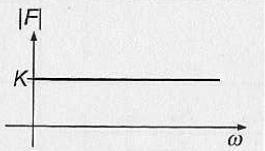
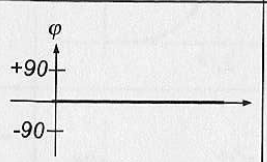
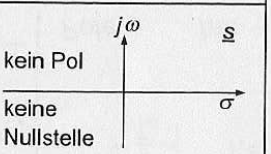
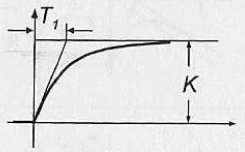
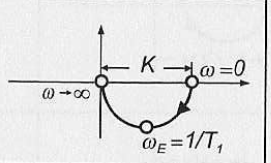
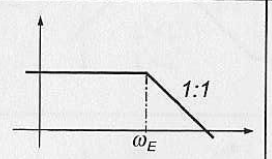
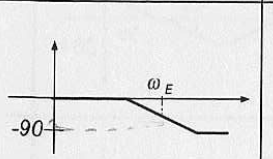
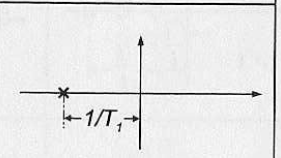
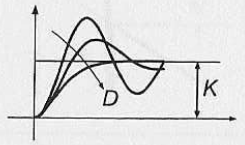
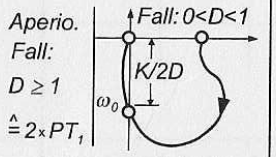
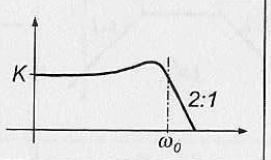
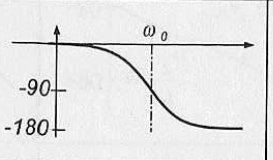
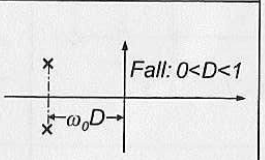
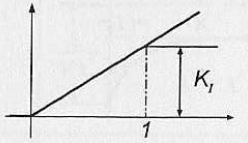
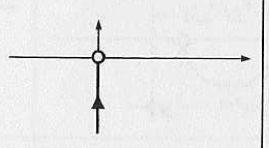
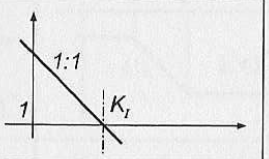
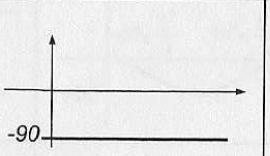
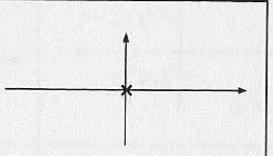
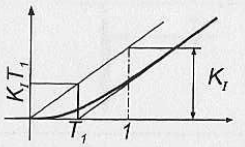
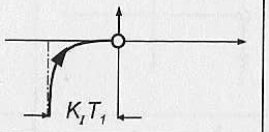
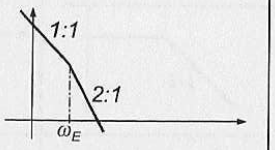
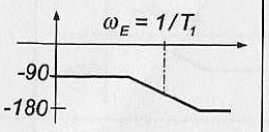
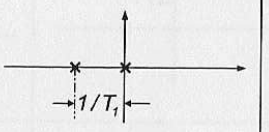
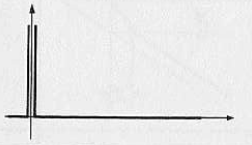
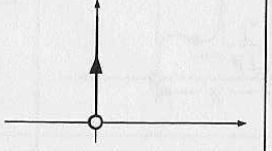
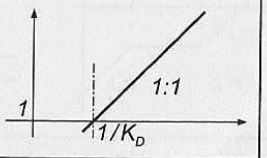
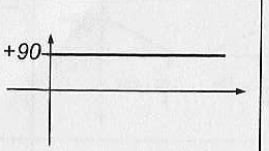
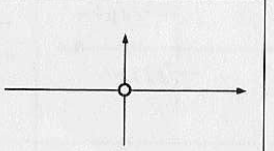
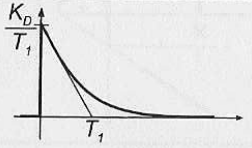
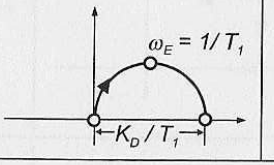
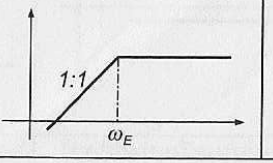
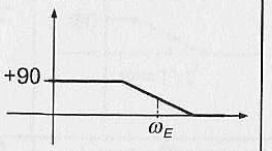
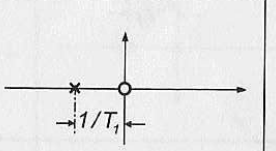
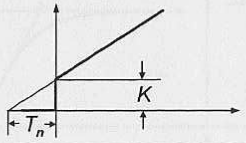
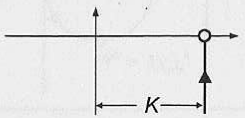
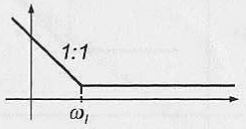
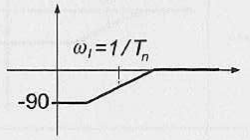
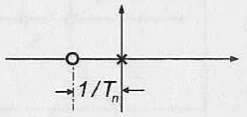
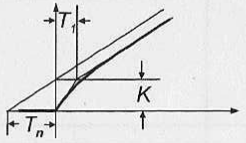
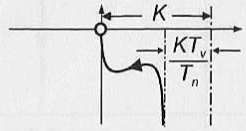
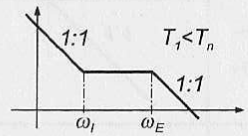
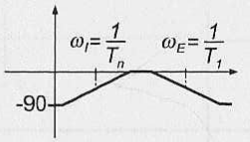
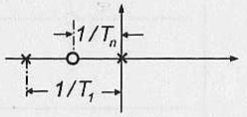
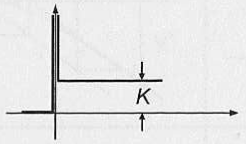
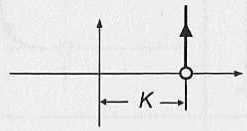
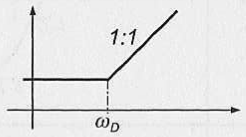
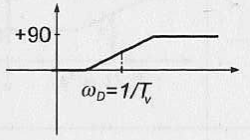
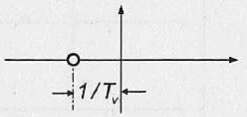
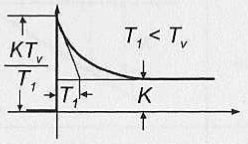
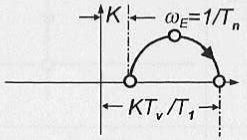
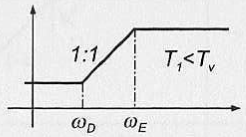
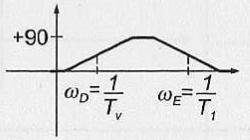
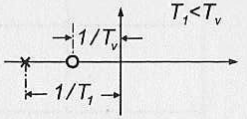
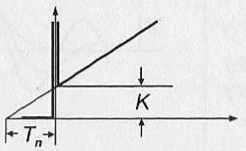
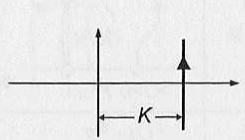
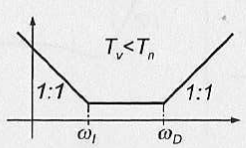
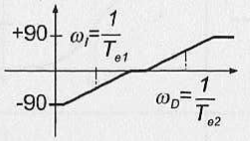
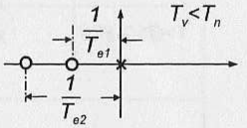
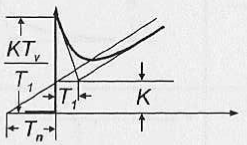
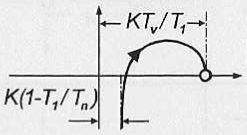
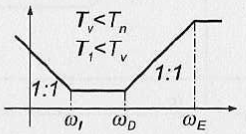
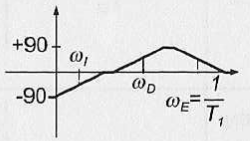
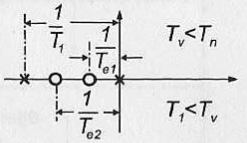
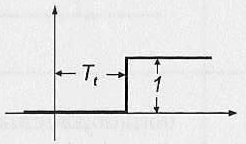
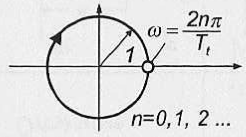
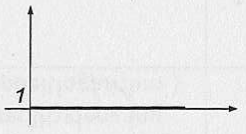
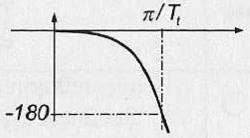
A.1 Verhalten typischer linearer Regelkreisblöcke

	System	Differentialgleichung	Übertragungs-funktion	Übergangsfunktion	Ortskurve	Bodediagramm: Amplitudengang (doppeltlogarithm.)	Bodediagramm: Phasengang (halblogarithm.)	s-Ebene: ○ Nullstelle × Pol
1	P	$x_a = K \cdot x_e(t)$	K					
2	PT_1	$T_1\dot{x}_a + x_a = K \cdot x_e(t)$	$\frac{K}{1+T_1 s}$					
3	PT_2	$\ddot{x}_a + 2D\omega_0\dot{x}_a + \omega_0^2 x_a = K\omega_0^2 \cdot x_e(t)$	$\frac{K\omega_0^2}{\omega_0^2 + 2D\omega_0 s + s^2}$					
4	I	$x_a = K_I \int x_e(t)dt$	$\frac{K_I}{s}$					
5	IT_1	$T_1\dot{x}_a + x_a = K_I \int x_e(t)dt$	$\frac{K_I}{s(1+T_1 s)}$					
6	D	$x_a = K_D \frac{dx_e(t)}{dt}$	$K_D s$					
7	DT_1	$T_1\dot{x}_a + x_a = K_D \frac{dx_e(t)}{dt}$	$\frac{K_D s}{1+T_1 s}$					

	System	Differentialgleichung	Übertragungs-funktion	Übergangsfunktion	Ortskurve	Bodediagramm Amplitudengang (doppeltlogarithm.)	Bodediagramm Phasengang (halblogarithm.)	s-Ebene ○ Nullstelle × Pol
8	PI	$x_a = K(x_e(t) + \frac{1}{T_n}\int x_e(t)dt)$	$K\left(1+\frac{1}{T_n s}\right)$					
9	PIT$_1$	$T_1\dot{x}_a + x_a = K(x_e(t) + \frac{1}{T_n}\int x_e(t)dt)$	$K\frac{1+\frac{1}{T_n s}}{1+T_1 s}$					
10	PD	$x_a = K\left(x_e(t) + T_v\frac{dx_e(t)}{dt}\right)$	$K(1+T_v s)$					
11	PDT$_1$	$T_1\dot{x}_a + x_a = K\left(x_e(t) + T_v\frac{dx_e(t)}{dt}\right)$	$K\frac{(1+T_v s)}{1+T_1 s}$					
12	PID	$x_a = K\left(x_e(t) + \frac{1}{T_n}\int x_e(t)dt + T_v\frac{dx_e(t)}{dt}\right)$	$K\left(1+\frac{1}{T_n s}+T_v s\right)$					
13	PIDT$_1$	$T_1\dot{x}_a + x_a = K\left(x_e(t) + \frac{1}{T_n}\int x_e(t)dt + T_v\frac{dx_e(t)}{dt}\right)$	$K\frac{1+\frac{1}{T_n s}+T_v s}{1+T_1 s}$					
14	T_t	$x_a = x_e(t - T_t)$	e^{-sT_t}					Pole bei $-\infty$ Nullstellen bei $+\infty$
15	Allpaß 1.Ordn.	$T_1\dot{x}_a + x_a = K(x_e(t) - T_1\dot{x}_e(t))$ $(T_1,\ K > 0)$	$K\frac{1-T_1 s}{1+T_1 s}$