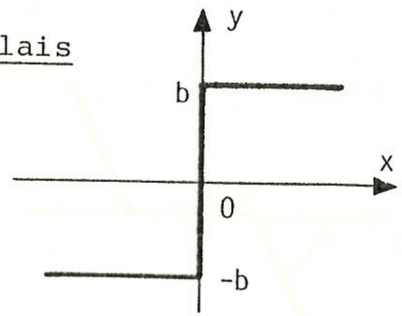
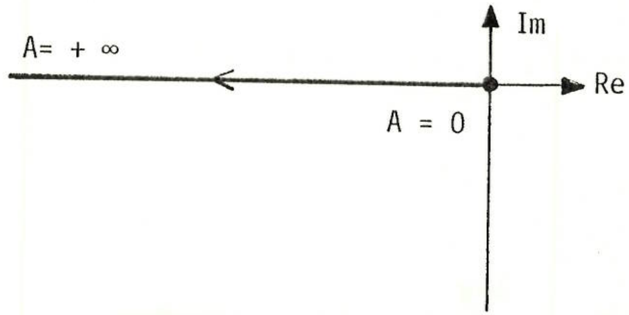
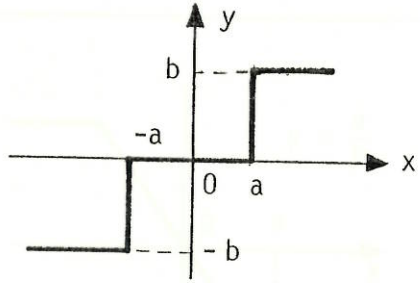
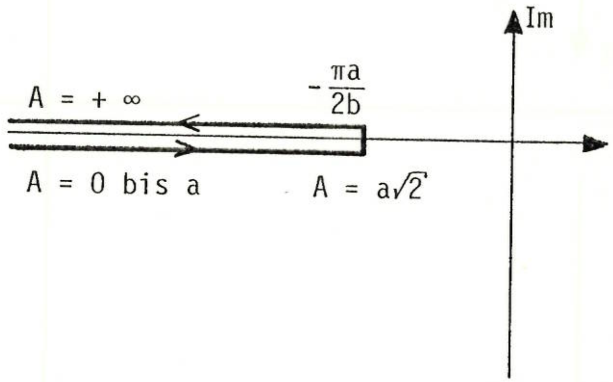
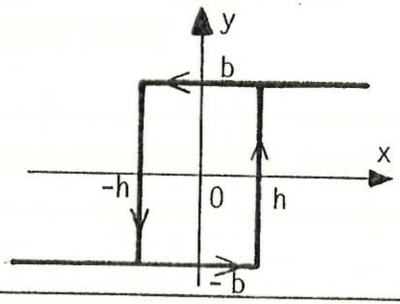
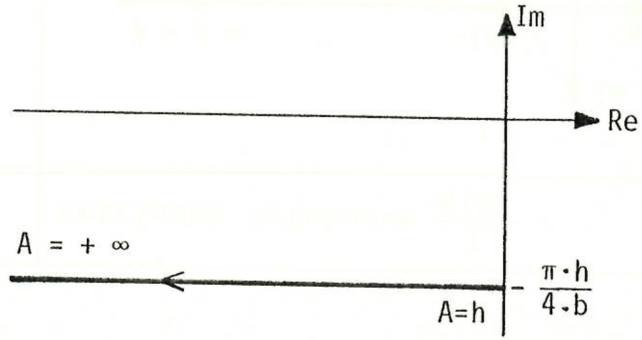
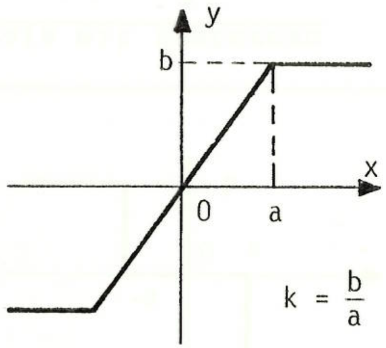
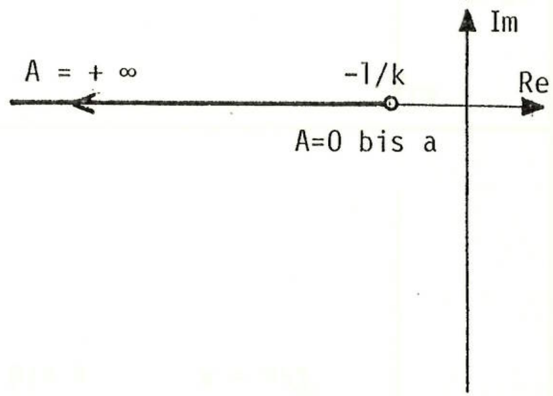
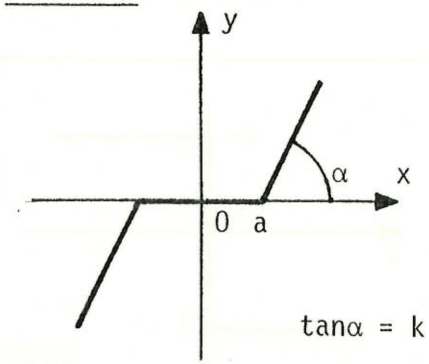
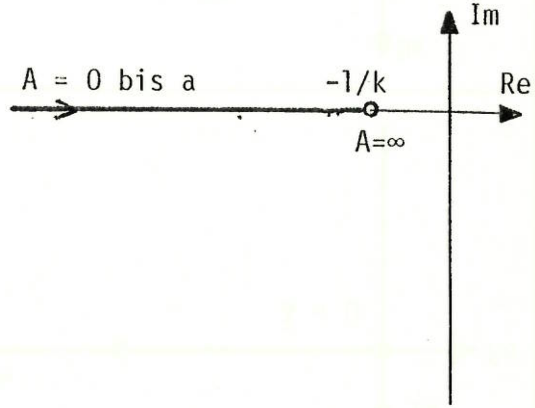
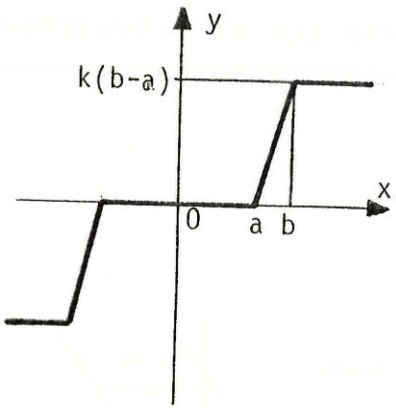
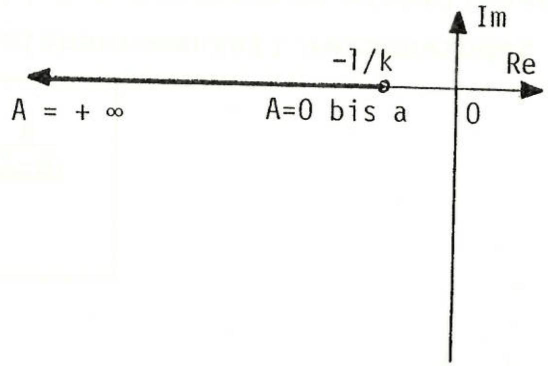
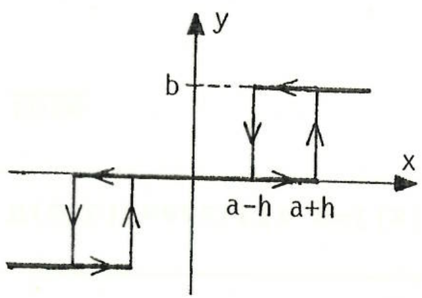
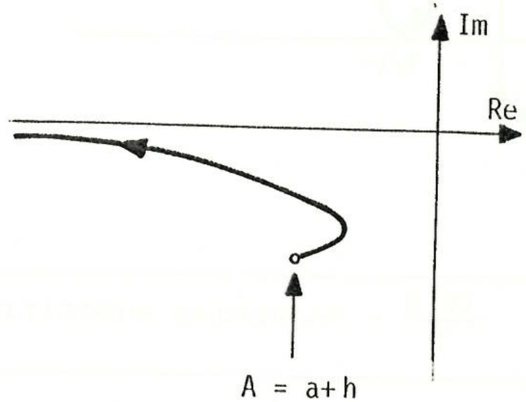
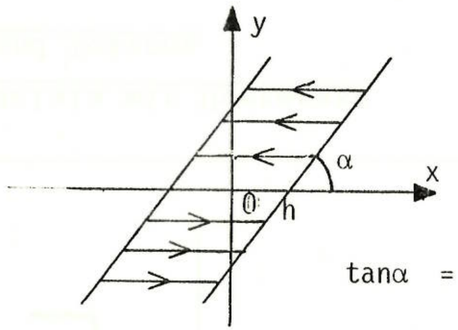
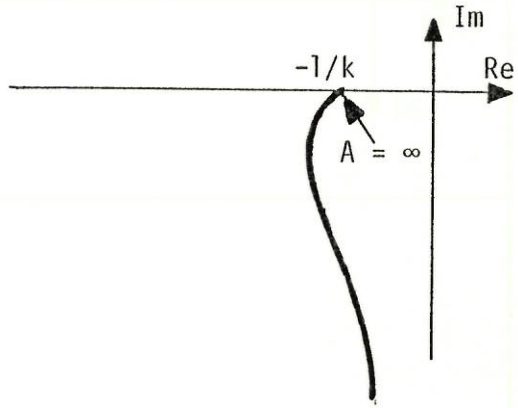
<table>
<tr><th>Nichtlinearität $y=f(x)$</th><th>Beschreibungsfunktion $N(A)$</th><th>Kritische Ortskurve $-\frac{1}{N(A)}$</th></tr>
<tr><td><u>Relais</u>
</td><td>$|N(A)| = \frac{4b}{\pi A}$
$\underline{/N(A)} = 0$ ($N(A)$ reell)</td><td></td></tr>
<tr><td><u>Relais mit Totzone</u>
</td><td>$R_a = \frac{a}{A}$
für $R_a > 1$ $(A < a)$ gilt:
$|N(A)| = 0$
für $R_a \leq 1$ $(a \leq A)$ gilt:
$|N(A)| = \frac{4b}{\pi A}\sqrt{1-R_a^2}$
$\underline{/N(A)} = 0$ ($N(A)$ reell)</td><td></td></tr>
<tr><td><u>Relais mit Hysterese</u>
</td><td>$R_h = \frac{h}{A}$
für $R_h \leq 1$ $(h \leq A)$ gilt:
$|N(A)| = \frac{4b}{\pi A}$
$\underline{/N(A)} = -\arcsin R_h$</td><td></td></tr>
</table>

Nichtlinearität $y=t(x)$	Beschreibungsfunktion $N(A)$	Kritische Ortskurve $\frac{1}{N(A)}$
<u>Sättigung</u>  $k = \frac{b}{a}$	$R = \frac{a}{A}$ für $R > 1$ $(A < a)$ gilt: $N(A) = k$ für $R \leq 1$ $(a \leq A)$ gilt: $\lvert N(A)\rvert = \frac{2k}{\pi}\left(\arcsin R + R\sqrt{1-R^2}\right)$ $\underline{/N(A)} = 0$ ($N(A)$ reell)	
<u>Totzone</u>  $\tan\alpha = k$	$R = \frac{a}{A}$ für $R > 1$ $(A < a)$ gilt: $N(A) = 0$ für $R \leq 1$ $(a \leq A)$ gilt: $\lvert N(A)\rvert = \frac{2k}{\pi}\left(\frac{\pi}{2} - \arcsin R - R\sqrt{1-R^2}\right)$ $\underline{/N(A)} = 0$ ($N(A)$ reell)	

Nichtlinearität $y=t(x)$	Beschreibungsfunktion $N(A)$	Kritische Ortskurve $\frac{-1}{N(A)}$
Sättigung und Totzone: 	$R_\alpha = \frac{a}{A}$, $R_\beta = \frac{b}{A}$ 1) $R_\alpha > 1$ $(A < a) \rightarrow N(A) = 0$ 2) $\left.\begin{array}{l} R_\alpha \leq 1 \\ R_\beta \geq 1 \end{array}\right\}$ $(a < A < b) \rightarrow$ Totzone 3) $R_\beta \leq 1$ $(b < A)$ $\lvert N(A) \rvert = \frac{2k}{\pi}$ (arc sin R_β - arc sin R_α + $+ R_\beta\sqrt{1-R_\beta^2} - R_\alpha\sqrt{1-R_\alpha^2})$ $\underline{/N(A)} = 0$ (N(A) reell)	
Relais mit Hysterese und Totzone 	$R_\alpha = \frac{a+h}{A}$, $R_\beta = \frac{a-h}{A}$ für $R_\alpha > 1$ $(A < a+h)$ gilt: $N(A) = 0$ für $R_\alpha \leq 1$ $(a+h \leq A)$ gilt: $\lvert N(A) \rvert = \frac{2b}{\pi A}\sqrt{2(1-R_\alpha R_\beta)+2\sqrt{(1-R_\alpha^2)(1-R_\beta^2)}}$ $\underline{/N(A)} = \mp \text{arc tan} \frac{R_\beta - R_\alpha}{\sqrt{1-R_\alpha^2}+\sqrt{1-R_\beta^2}}$	

Nichtlinearität $y=f(x)$	Beschreibungsfunktion $N(A)$	Kritische Ortskurve $-\frac{1}{N(A)}$
<u>Lose</u>  $\tan\alpha = k$	$R = \frac{h}{A}$ für $R > 1$ $(A < h)$ gilt: $N(A) = 0$ für $R \leq 1$ $(h \leq A)$ gilt: $\lvert N(A)\rvert = \frac{k}{\pi}\{[\frac{\pi}{2} + \arcsin(1-2R)]^2 +$ $+[\pi + 2\arcsin(1-2R)]2R(1-2R)\sqrt{\frac{1-R}{R}} +$ $+ 4R(1-R)\}^{1/2}$, $\underline{/N(A)} = \arctan \frac{4R(R-1)}{\frac{\pi}{2} + \arcsin(1-2R) + 2R(1-2R)\sqrt{\frac{1-R}{R}}}$	

<u>Anmerkung:</u> In all diesen Formeln wurde vorausgesetzt, dass der Gleichstromanteil verschwindet (symmetrische Auslenkung). Aus Symmetriegründen (alle hier betrachteten nichtlinearen Kennlinien sind punktsymmetrisch zum Nullpunkt) gilt dies immer, wenn der Gleichstromanteil des Eingangssignals Null ist.