

S.93 Nr. 2 (HP = Hochpunkt, TP = Tiefpunkt, SP = Sattelpunkt)

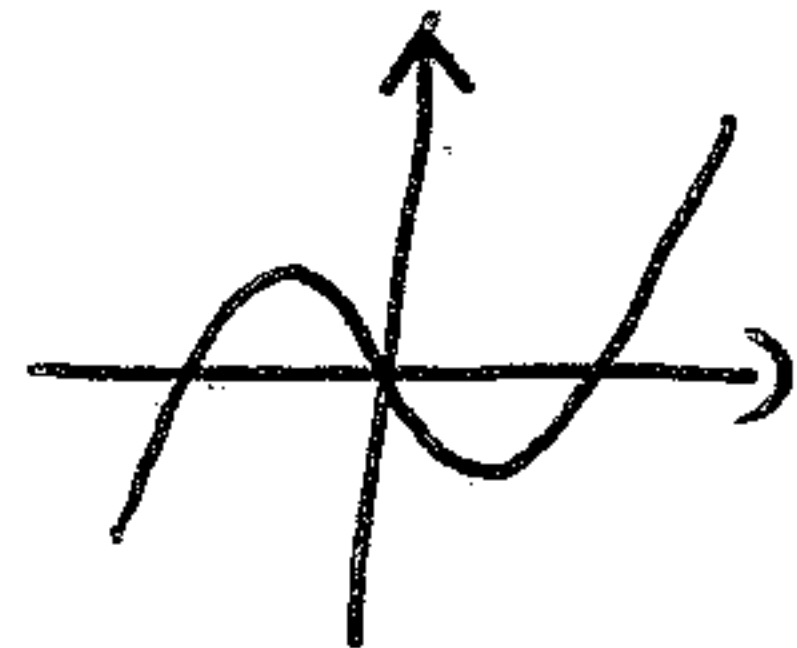
e) n.B. $f'(x) = 0$

$3x^2 - 3 = 0 \Leftrightarrow 3x^2 = 3 \Leftrightarrow x^2 = 1 \Leftrightarrow x = -1 \vee x = 1$ (mögl. Extremstellen)

h.B. $f'(x) = 0$ n. VZW von f'

Monotonietabelle

	$\xrightarrow{\quad -1 \qquad \qquad \qquad 1 \quad}$			x
x_0	-2	0	2	
$f'(x_0)$	9	-3	9	
Mon.	\nearrow	\searrow	\nearrow	
	HP (-1 2)		TP (1 -2)	



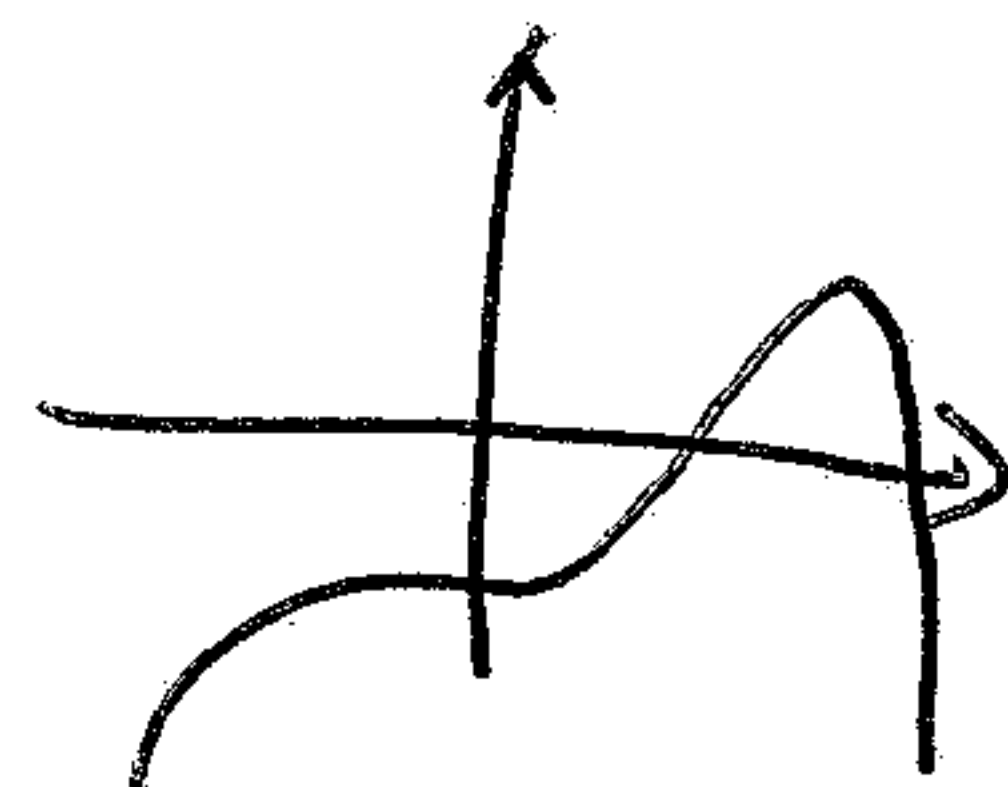
g) n.B. $f'(x) = 0$

$-x^3 + 3x^2 = 0 \Leftrightarrow -x^2(x-3) = 0 \Leftrightarrow x = 0 \vee x = 3$ (mögl. Extremstellen)

h.B. $f'(x) = 0$ n. VZW von f'

Monotonietabelle

	$\xrightarrow{\quad 0 \qquad \qquad \qquad 3 \quad}$			x
x_0	-1	1	4	
$f'(x_0)$	4	2	-16	
Mon.	\nearrow	\nearrow	\searrow	
	SP (0 -4)		HP (3 $\frac{11}{4}$)	



h) $f(x) = (x^2 - 1)^2 = x^4 - 2x^2 + 1$

n.B. $f'(x) = 0$

$4x^3 - 4x = 0 \Leftrightarrow 4x(x^2 - 1) = 0 \Leftrightarrow x = -1 \vee x = 0 \vee x = 1$ (mögl. Extremstellen)

h.B. $f'(x) = 0$ n. VZW von f'

Monotonietabelle

	$\xrightarrow{\quad -1 \qquad \qquad 0 \qquad \qquad 1 \quad}$				x	
x_0	-2	$-\frac{1}{2}$	$\frac{1}{2}$	2		
$f'(x_0)$	-24	$\frac{3}{2}$	$-\frac{3}{2}$	24		
Mon.	\searrow	\nearrow	\searrow	\nearrow		
	TP (-1 0)		HP (0 1)		TP (1 0)	

