Kurvendiskussion S.77/3 d)

30. Nov. 2015

$f(x) = 2 - \frac{5}{2}x^2 + x^4$

$D = \mathbb{R}$

$f(x) = f(-x)$ achsensymmetrisch, da alle Potenzen gerade sind

$2 - \frac{5}{2}x^2 + x^4 \neq 0 \Rightarrow$ keine NS ✓ Woher? Substitution!

$f(0) = 2 - 0 + 0 = 2 \quad Sy(0|2)$

$\lim_{x \to -\infty} f(x) = \infty \qquad \lim_{x \to \infty} f(x) = \infty$

$f'(x) = 4x^3 - 5x$

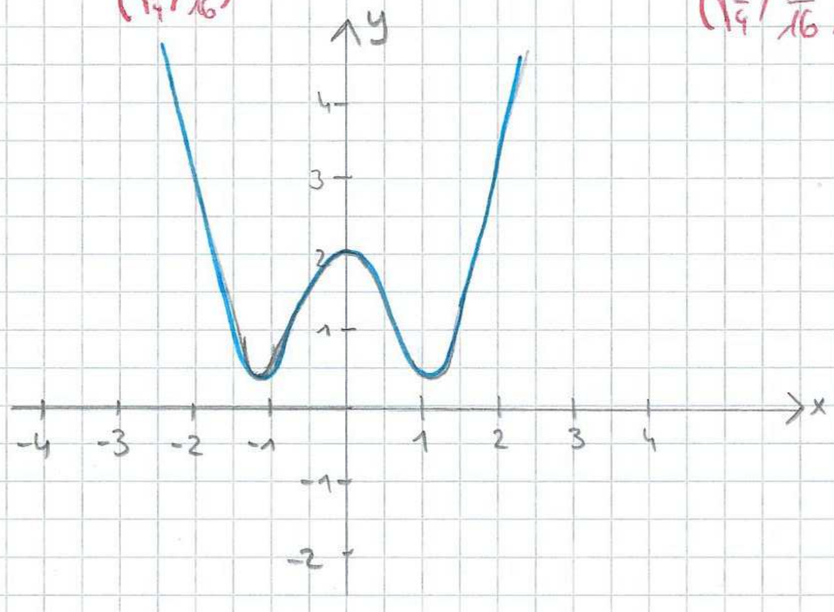
$4x^3 - 5x = 0 \quad |+5x \qquad x_1 = 0$

$4x^3 = 5x \quad |:x \neq 0 \qquad x_2 = \sqrt{\frac{5}{4}}$

$4x^2 = 5 \quad |:4 \qquad x_3 = -\sqrt{\frac{5}{4}}$

$x^2 = \frac{5}{4} \quad |\sqrt{\ }$

x	$-\infty < x < -\sqrt{\frac{5}{4}}$	$x = -\sqrt{\frac{5}{4}}$	$-\sqrt{\frac{5}{4}} < x < 0$	$x = 0$	$0 < x < \sqrt{\frac{5}{4}}$	$x = \sqrt{\frac{5}{4}}$	$\sqrt{\frac{5}{4}} < x < \infty$
$f'(x)$	−	0	+	0	−	0	+
$f(x)$	smf	Min $y=0{,}43$ $\left(-\sqrt{\frac{5}{4}} \middle| \frac{7}{16}\right)$	sms	Max $y=2$	smf	Min $y=0{,}43$ $\left(\sqrt{\frac{5}{4}} \middle| \frac{7}{16}\right)$	sms



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