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Nr. 12) symmetrisch zur y-Achse; Grad 4

$\Rightarrow f(x) = ax^4 + bx^2 + c$; $f'(x) = 4ax^3 + 2bx$; $f''(x) = 12ax^2 + 2b$

$W_1(1|0) \Rightarrow f(1) = 1a + 1b + c = 0 \Rightarrow c = -a - b$

$\Rightarrow f''(1) = 12a + 2b = 0 \Rightarrow 2b = -12a \Rightarrow b = -6a$

Damit sich die Wendetangenten rechtwinklig schneiden.

$\Rightarrow f'(-1) \cdot f'(1) = -1$

$(-4a - 2b) \cdot (4a + 2b) = -1$

$-16a^2 - 8ab - 8ab - 4b^2 = -1$

$-16a^2 - 8a \cdot (-6a) - 8a \cdot (-6a) - 4 \cdot (-6a)^2 = -1$

$-16a^2 + 48a^2 + 48a^2 - 144a^2 = -1$

$-64a^2 = -1$

$a^2 = \frac{1}{64} \Rightarrow \underline{\underline{a_{1,2}}} = \pm\sqrt{\frac{1}{64}} = \underline{\underline{\pm\frac{1}{8}}}$

$\underline{\underline{b_1}} = -6 \cdot (+\frac{1}{8}) = \underline{\underline{-\frac{3}{4}}}$; $\underline{\underline{b_2}} = -6 \cdot (-\frac{1}{8}) = \underline{\underline{+\frac{3}{4}}}$

$\underline{\underline{c_1}} = -1a_1 - 1b_1 = -\frac{1}{8} - 1 \cdot (-\frac{3}{4}) = \underline{\underline{\frac{5}{8}}}$; $c_2 = -1 \cdot (-\frac{1}{8}) - 1 \cdot (+\frac{3}{4}) =$

$\underline{\underline{c_2 = -\frac{5}{8}}}$

$\underline{\underline{f_1(x) = \frac{1}{8}x^4 - \frac{3}{4}x^2 + \frac{5}{8}}}$

$\underline{\underline{f_2(x) = -\frac{1}{8}x^4 + \frac{3}{4}x^2 - \frac{5}{8}}}$

O. Fell