S. 120 Nr. 6

$f(x) = (x^2-3)\cdot e^x$

a) $N_1(\sqrt{3}|0)$ $N_2(-\sqrt{3}|0)$

b) $f'(x) = 2xe^x + (x^2-3)\cdot e^x$

$= e^x(x^2+2x-3)$

$m_1 = f'(\sqrt{3}) = 2\cdot\sqrt{3}\cdot e^{\sqrt{3}} \approx 19{,}58$

$m_2 = f'(-\sqrt{3}) = -2\cdot\sqrt{3}\cdot e^{-\sqrt{3}} \approx -0{,}61$

c) $f'(x) = 0 \Rightarrow x_1 = 1$ $x_2 = -3$

$E_1(1|-2e)$ $E_2(-3|6e^{-3})$

d) $d = \sqrt{(1-(-3))^2+(-2e-6e^{-3})^2} \approx 6{,}99$ LE

S. 120 Nr. 7

$f(2) = 0$ <u>und</u> $f'(2) = 0$

a) $g(x) = x\cdot f(x) \Rightarrow g(2) = 2\cdot f(2) = 0$

$g'(x) = 1\cdot f(x) + x\cdot f'(x) \Rightarrow g'(2) = 1\cdot 0 + 2\cdot 0 = 0$

$\rightarrow K_g$ berührt x-Achse in $P(2|0)$

b) $g''(x) = f'(x) + f'(x) + x\cdot f''(x)$

$g''(2) = 2\cdot\underbrace{f'(2)}_{0} + 2\cdot\underbrace{f''(2)}_{<0} < 0$

$\left.\begin{array}{l} a) \Rightarrow g'(2) = 0 \\ g''(2) < 0 \end{array}\right\} \Rightarrow P(2|0)$ HP von g

c) $g(-2) = 0$ $g'(-2) = 0$ P bleibt Berührp.

$g''(-2) = 2\cdot 0 - 2\cdot\underbrace{f''(-2)}_{<0} > 0$

$\Rightarrow P(-2|0)$ wird TP von g