

7. Hausübung

$$297a) \quad y = \frac{1}{4}x^2 + \frac{1}{2}x - \frac{15}{4} \quad [-6; 5]$$

$$y' = \frac{1}{2}x + \frac{1}{2}$$

$$y'' = \frac{1}{2}$$

$$N: \quad x^2 + 2x - 15 = 0 \quad \Rightarrow \quad x_1 = -5 \quad x_2 = 3$$

$$E: \quad x + 1 = 0 \Rightarrow x = -1$$

$$f(-1) = -4$$

$$W: \quad f'' > 0 \Rightarrow \text{kein W, Extr.} = T$$

$$A(-6 |$$

$$f(-6) = 2,25$$

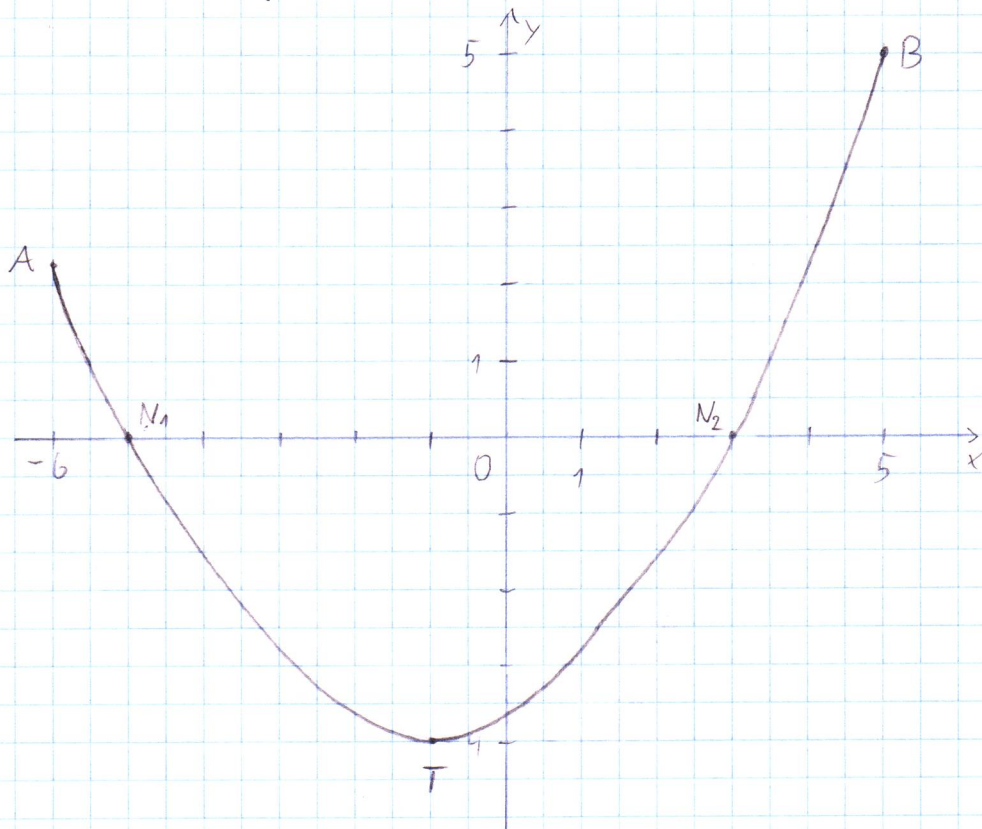
$$N_1(-5 | 0)$$

$$N_2(3 | 0)$$

$$T(-1 | -4)$$

$$A(-6 | 2,25)$$

$$B(5 | 5)$$



$$314) \quad f(x) = ax^3 + bx^2 + cx + d$$

$$0(0|0) = \text{Extr.} \quad W(1 | \frac{2}{3})$$

$$f'(x) = 3ax^2 + 2bx + c$$

$$f''(x) = 6ax + 2b$$

$$(0|0) : d = 0$$

$$(1|\frac{2}{3}) : a + b + c + d = \frac{2}{3} \quad (*)$$

$$E: \quad c = 0$$

$$W: \quad 6a + 2b = 0 \Rightarrow b = -3a \rightarrow (*)$$

$$a - 3a = \frac{2}{3}$$

$$-2a = \frac{2}{3} \quad | : (-2)$$

$$a = -\frac{1}{3} \Rightarrow b = (-3) \cdot (-\frac{1}{3}) = 1$$

$$\underline{\underline{f(x) = -\frac{1}{3}x^3 + x^2}}$$