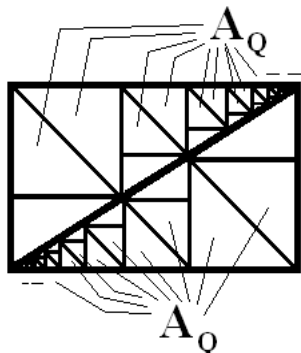


Alle Teilaufgaben werden gleich bewertet! (Die Skizzen gelten als Korrekturhilfen.)

**Probl. 1**



$$A_{\text{Rechteck}} = 40 \cdot 24$$

(Länge 40, Breite 24)

$$A_Q : A_{\text{Rechteck}} = /?$$

**Probl. 2**  $f(x) = (x^4 + 1) \cdot (x^2 - 1) + 1$

(a)  $f'(x) = ?$

(b)  $f'(1) = f(x)|_{x=1} = ?$

(c)  $f'(x) = \tan(\alpha(x)) \Rightarrow \alpha(1) = ?$

**Probl. 3**  $f'(x) = (4x^5 - 6x^4 + 2x^3 - x^2) \cdot \frac{2}{x^2}$

(a)  $f''(x) = 10 \Rightarrow x = ?$

(b)  $f''(x) = 0 \Rightarrow x = ?$  (Falls möglich!)

**Probl. 4**  $f(x) = (ax + b) \cdot (x + c)$ ,  $f(0) = 1$ ,  $f'(1) = 0$ ,  $f(1) = -(ac + b) \Rightarrow a, b, c = ?$

**Probl. 5** (a)  $a_n = \sum_{k=1}^n \frac{k+1}{2k^3+1}$  konvergent?

(b)  $\sum_{n=2}^{\infty} \frac{1}{n^2-1} = ?$  (Idee: Studiere  $\frac{1}{n+1} - \frac{1}{n-1}$ )

**Probl. 6**  $\lim_{n \rightarrow \infty} n^2 \cdot \frac{4 \cdot \sin(5n - n^2) + 2n^5 - 6n}{3 + an^7 - bn^5} = 4 \Rightarrow a, b = ?$  (Falls möglich!)

**Probl. 7**  $a_1 = 3$ ,  $a_2 = -5$ ,  $b_n = a_{n-1}$ ,  $a_n = a_{n-1} + b_{n-1} \Rightarrow a_7 = ?$ ,  $b_7 = ?$

Viel Glück!