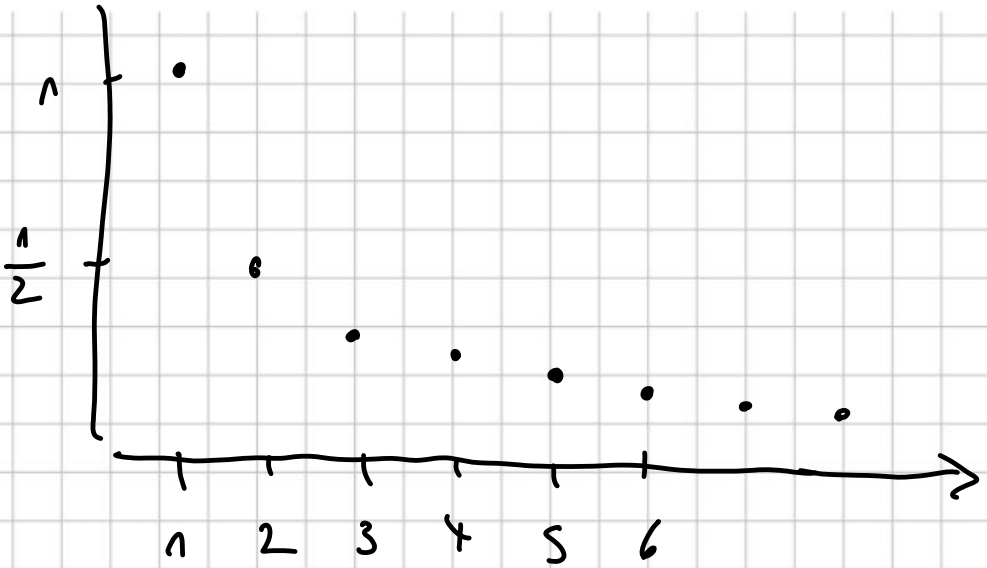
Dipl.-Math. Dipl.-Kfm. Daniel Lambert
https://www.wiwiweb.de

$$a_n = \frac{1}{n}$$

$$a_{n+1} < a_n$$

STR. MONOT. FALLEND



BEW.: $\frac{1}{n+1} < \frac{1}{n}$, DENN $n+1 > n$

Dipl.-Math. Dipl.-Kfm. Daniel Lambert
https://www.wiwiweb.de

GLEICHUNGEN

$$a_n = \frac{\square n + 8n}{\square n^3 - 4n + 16} \longrightarrow -\frac{2}{5}$$

$$a_1 = \frac{-2 \cdot 1^3 + 8 \cdot 1}{5 \cdot 1^3 - 4 \cdot 1 + 16} = \frac{6}{17}$$

wiwiweb.de
Dipl.-Math. Dipl.-Kfm. Daniel Lambert
https://www.wiwiweb.de

GLEICHUNGEN

- 1. GR
- 2. GR. → pq-FORMEL
- 3. GR., 4. GR. ITERATIONSVERF. → NEWTON-VERF.
  APPROX. —"— → LIN. INTERPOL.

$$\left(\ln u(x)\right)' = \frac{1}{u(x)} \cdot u'(x)$$

$$\left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2}$$

Dipl.-Math. Dipl.-Kfm. Daniel Lambert
https://www.wiwiweb.de

$$\left[\ln\left[\frac{(x+2)}{\sqrt{x^2-4}}\right]\right]' = \underbrace{\frac{1}{\frac{x+2}{\sqrt{x^2-4}}}}_{\text{äußere Ableitung}} \cdot \underbrace{\frac{1\cdot\sqrt{x^2-4}' - (x+2)\cdot\frac{1}{2}\cdot(x^2-4)^{-\frac{1}{2}}\cdot 2x}{\sqrt{x^2-4}^2}}_{\text{innere Ableitung}}$$

$$\sqrt{x^2-4} = (x^2-4)^{\frac{1}{2}}$$

$$= \frac{\sqrt{x^2-4}'}{x+2} \cdot \frac{\sqrt{x^2-4} - \frac{x\cdot(x+2)}{(x^2-4)^{1/2}}}{x^2-4}$$

$$= \frac{\sqrt{(x+2)(x-2)}}{x+2} \cdot \frac{\sqrt{x^2-4} - \frac{x\cdot(x+2)}{\sqrt{(x+2)(x-2)}}}{x^2-4}$$

$$= \frac{\sqrt{x+2}}{x+2} \cdot \frac{\sqrt{x-2}}{1} \cdot \frac{\sqrt{x^2-4} - \frac{x\cdot(x+2)}{\sqrt{(x+2)(x-2)}}}{x^2-4}$$

$$= \frac{\sqrt{x-2}}{\sqrt{x+2}} \cdot \frac{\sqrt{x^2-4} - \frac{x\cdot\sqrt{x+2}}{\sqrt{x-2}}}{x^2-4}$$

$$= \frac{\sqrt{x-2}}{\sqrt{x+2}} : \frac{\sqrt{x-2}\sqrt{(x+2)(x-2)}' - x \cdot \sqrt{x+2}'}{\sqrt{x-2}} \Big/ (x+2)(x-2)$$

$$= \frac{\cancel{\sqrt{x-2}} \; \frac{(x-2)\cdot\sqrt{x+2}' - \sqrt{x+2}'\cdot x}{\cancel{\sqrt{x-2}}}}{\sqrt{x+2}' \cdot (x+2)(x-2)}$$

$$= \frac{(x-2)\sqrt{x+2}' - \sqrt{x+2}'\cdot x}{\sqrt{x+2}' \cdot (x+2)\cdot(x-2)}$$

Dipl.-Math. Dipl.-Kfm. Daniel Lambert
https://www.wiwiweb.de

$$= \frac{\cancel{\sqrt{x+2}^{1}} \cdot (x-2-x)}{\cancel{\sqrt{(x+2)}} \, (x-2)(x+2)}$$

$$= \frac{-2}{(x-2)(x+2)}$$