

Guten Morgen gA 😊

g. 2. 19

$$\begin{aligned}x^2 + x^2 &= 2x^2 \\x^2 \cdot x^2 &= x^4\end{aligned}$$

F-Felder

$$\begin{array}{r}4x^2 = x^2 - 4 \quad | +4 \\8 - x^2 = x^2 \quad | +x^2\end{array}$$

$$8 = 2x^2 \quad | :2$$

$$4 = x^2 \quad | \sqrt{\quad}$$

$$\pm 2 = x_{1,2}$$

$$f(x) = a x^n$$

$$F(x) = \frac{a}{n+1} x^{n+1}$$

$$\int_{-2}^2 (f(x) - g(x)) dx = \int_{-2}^2 ((4-x^2) - (x^2-4)) dx$$

$$= \int_{-2}^2 (8 - 2x^2) dx = \left[ 8x - \frac{2}{3}x^3 \right]_{-2}^2 = 8 \cdot 2 - \frac{2}{3} \cdot 2^3 - \left( 8 \cdot (-2) - \frac{2}{3}(-2)^3 \right)$$

2a)

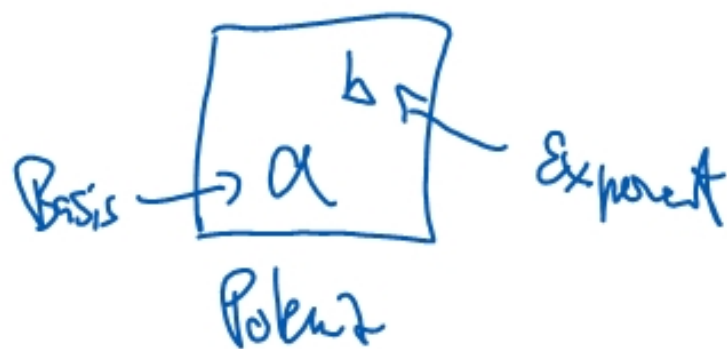
$$f(x) = ax^3 + bx^2 + cx + d$$

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

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

ganzzahlig:  $x = \text{Basis}$

Exponent: natürlich



$w(0|0) \rightarrow f(0) = 0$

$\rightarrow f''(0) = 0$

$$0 = a \cdot 0^3 + b \cdot 0^2 + c \cdot 0 + d$$

$$0 = d$$

$H(2) \rightarrow f(2) = 2$

$\rightarrow f'(2) = 0$

$$2 = a \cdot 2^3 + c \cdot 2 \Leftrightarrow 2 = 8a + 2c$$

$$0 = 3a \cdot 2^2 + c \Leftrightarrow 0 = 12a + c$$

$$\text{I } z = 8a + 2c$$

$$\text{II } 0 = 12a + c \quad | \cdot (-2)$$

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$$\begin{array}{r} z = 8a + 2c \\ 0 = -24a - 2c \end{array} \quad \left. \vphantom{\begin{array}{r} z = 8a + 2c \\ 0 = -24a - 2c \end{array}} \right] \oplus$$

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$$z = -16a \quad | : (-16)$$

$$-\frac{1}{8} = a$$

a in I:

$$z = 8 \cdot \left(-\frac{1}{8}\right) + 2c$$

$$z = -1 + 2c \quad | +1$$

$$z = 2c \quad | : 2$$

$$\underline{\underline{\frac{z}{2} = c}}$$

$$f(x) = -\frac{1}{8}x^3 + \frac{3}{2}x$$

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•  $f(0) = 10 \checkmark$

•  $f(\pm 25) \approx 2,1 \checkmark$

•  $g(x) = 5 \quad f(x) = g(x) \Rightarrow$

groß - klein  
 $16,65 - (-16,65)$   
 $x_1 \approx -16,65$   
 $x_2 \approx 16,65$  ]  $33,3 > 30 \checkmark$

•  $Q = \int_{-25}^{25} f(x) dx \approx 327,16$

$V = G \cdot h$

$V = Q \cdot l = 327,16 \text{ m}^2 \cdot 100 \text{ m} = 32716 \text{ m}^3 > 30000 \text{ m}^3 \checkmark$

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b)



$$A = a \cdot b$$

$$A = 2x \cdot f(x)$$

$$0 \leq x \leq 25$$

$$y_{11} = 2x \cdot 10e^{-\frac{1}{400}x^2}$$

$$\max \quad (14,14 \mid 171,55)$$

$$\frac{a}{2} \quad A$$

$$a = 28,28$$

$$b = 6,07$$