

22te Hü am 8.12.22

Bsp's 4.16a), 4.17b), 4.173b)

4.16a)

$$y = \sqrt{\sin(x) \cdot \cos(3x)}$$

$$y = (\sin(x) \cdot \cos(3x))^{\frac{1}{2}}$$

$$y' = \frac{1}{2 \sqrt{\sin(x) \cdot \cos(3x)}} \cdot 2'$$

$$u = \sin(x)$$

$$u' = \cos(x)$$

$$v = \cos(3x)$$

$$v' = -3 \cdot \sin(3x)$$

$$2' = \cos(x) \cdot \cos(3x) - 3 \cdot \sin(3x) \cdot \sin(x)$$

$$y' = \frac{\cos(x) \cdot \cos(3x) - 3 \cdot \sin(3x) \cdot \sin(x)}{2 \sqrt{\sin(x) \cdot \cos(3x)}}$$

4.17b)

$$f'(x) = \ln(1+x^2)$$

$$f'(x) = \frac{2x}{1+x^2} \quad \begin{matrix} \text{innen} \\ \text{außen} \end{matrix}$$

4.173b) $U = A \cdot (1 - e^{-\frac{2t}{A}})$: $\frac{dU}{dt}$, $\frac{d^2U}{dt^2}$, $\frac{dU}{dA}$

$$u = A$$

$$u' = 1$$

$$v = 1 - e^{-\frac{2t}{A}}$$

$$v' = \frac{2t e^{-\frac{2t}{A}}}{A}$$

$$\left(\frac{dU}{dt} \right) = 1 \cdot \frac{2t e^{-\frac{2t}{A}}}{A}$$

$$= \frac{2t e^{-\frac{2t}{A}}}{A}$$

$$= \frac{2}{e^{\frac{2t}{A}}}$$

$$HN: A e^{\frac{2t}{A}}$$

$$HN$$

$$\frac{dU}{dA} = 1 - e^{-\frac{2t}{A}} - \frac{2t e^{-\frac{2t}{A}}}{A}$$

$$= 1 - \frac{1}{e^{\frac{2t}{A}}} - \frac{2t}{A e^{\frac{2t}{A}}}$$

$$\left(\frac{dU}{dA} \right) = \frac{A e^{\frac{2t}{A}} - A - 2t}{A e^{\frac{2t}{A}}}$$

$$= \frac{A e^{\frac{2t}{A}} - A - 2t}{A e^{\frac{2t}{A}}}$$

$$A$$