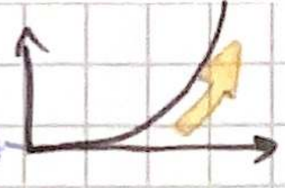
Exponentielles Wachstum



$$f(x) = a \cdot b^x = a \cdot e^{\ln(b) \cdot x} = a \cdot e^{k \cdot x}$$

$$f'(x) = k \cdot a \cdot e^{k \cdot x} = k \cdot f(x)$$

a = Anfangsbestand
b = Wachstumsfaktor
k = Wachstumskonstante ($= \ln(b)$)

Logistisches Wachstum

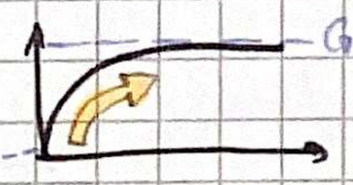
$$WP = \frac{\ln\left(\frac{G}{A} - 1\right)}{k \cdot G}$$

$$f(x) = \frac{A \cdot G}{A + (G - A) \cdot e^{-k \cdot G \cdot x}}$$

$$f'(x) = k \cdot f(x) \cdot (G - f(x))$$

A = Anfangsbestand
G = Grenzwert
k = Wachstumskonstante

Begrenztes Wachstum



$$f(x) = (A - G) \cdot e^{-kx} + G$$

$$f'(x) = k \cdot (G - f(x))$$

A = Anfangsbestand
G = Grenzwert
k = Wachstumskonstante