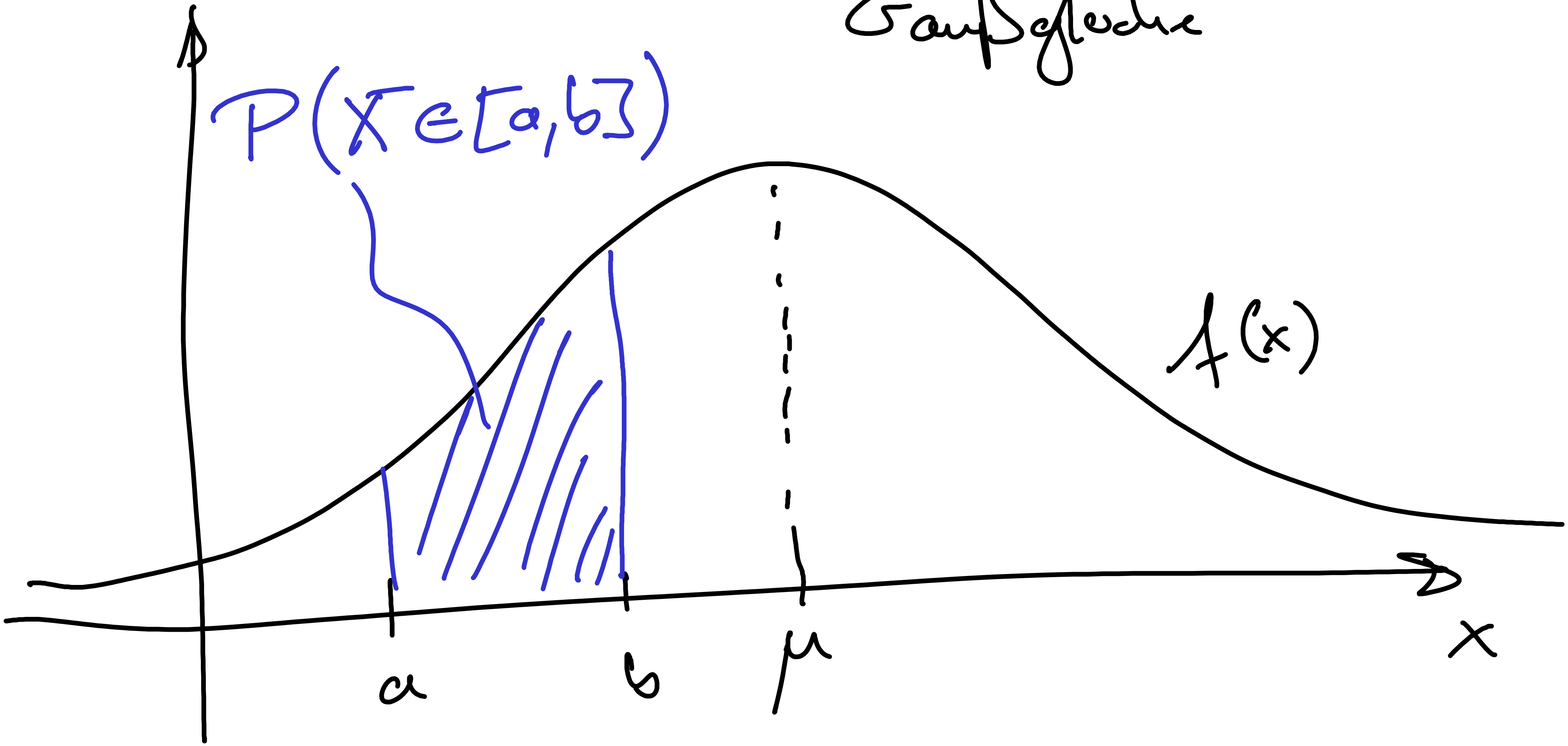
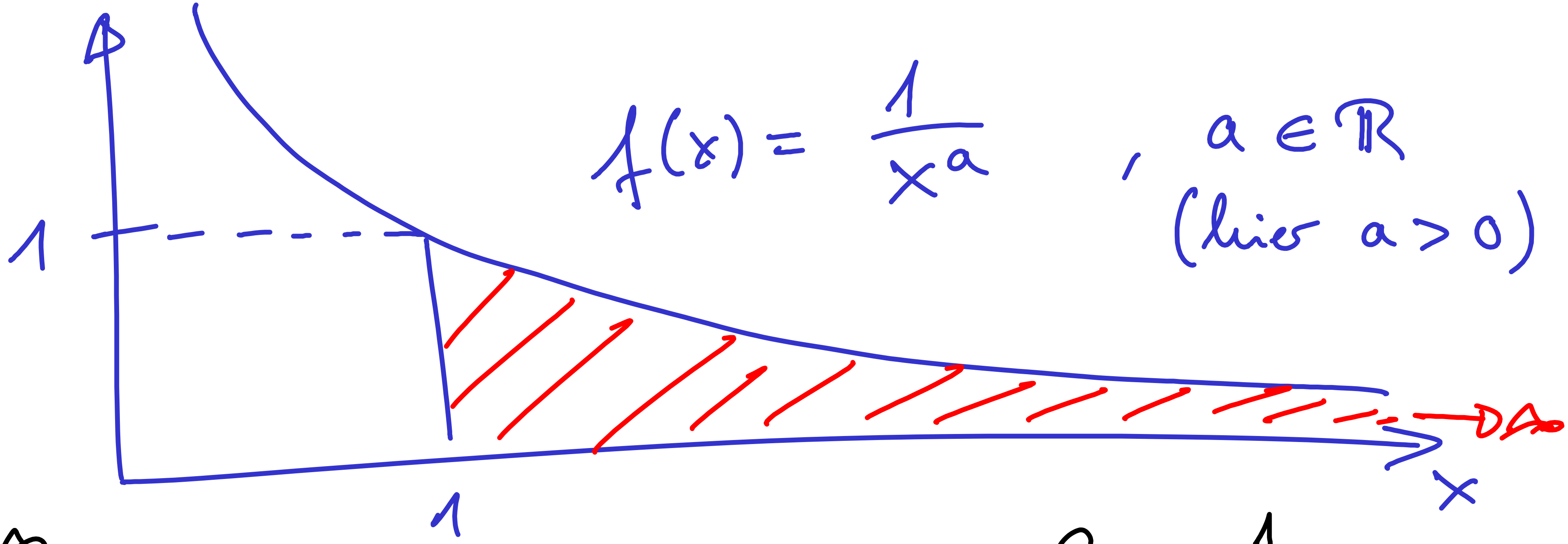
"Gaußglocke"





$f(x) = \frac{1}{x^a}$, $a \in \mathbb{R}$ (hier $a > 0$)

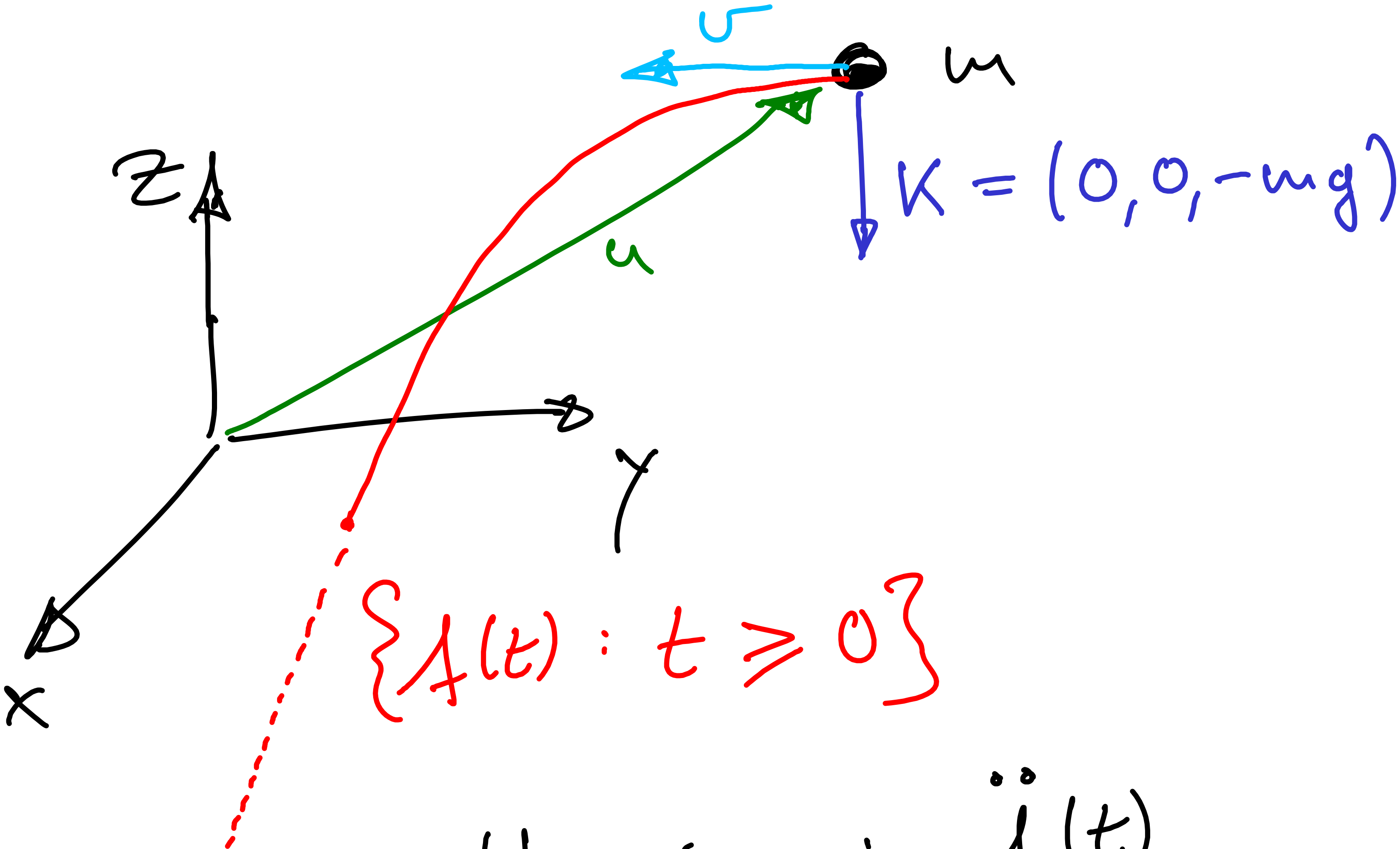
$$\int_1^\infty \frac{1}{x^a}\,dx \underset{a\neq 1}{=} \left[\frac{x^{-a+1}}{1-a}\right]_1^\infty = \begin{cases} 0 - \frac{1}{1-a}, & a>1 \\ \infty, & a<1 \end{cases}$$

$$= \begin{cases} \frac{1}{a-1}, & a>1 \\ \infty, & a \leq 1 \end{cases}$$

z.B. $\int_1^\infty \frac{dx}{x^2} = \frac{1}{2-1} = 1$, $\int_1^\infty \frac{dx}{\sqrt{x}} = \infty$

Grenzfall $\alpha = 1$

$$\int_1^\infty \frac{1}{x}\,dx = \left[\log x\right]_1^\infty = \infty$$



Beschleunigung: $\ddot{f}(t)$

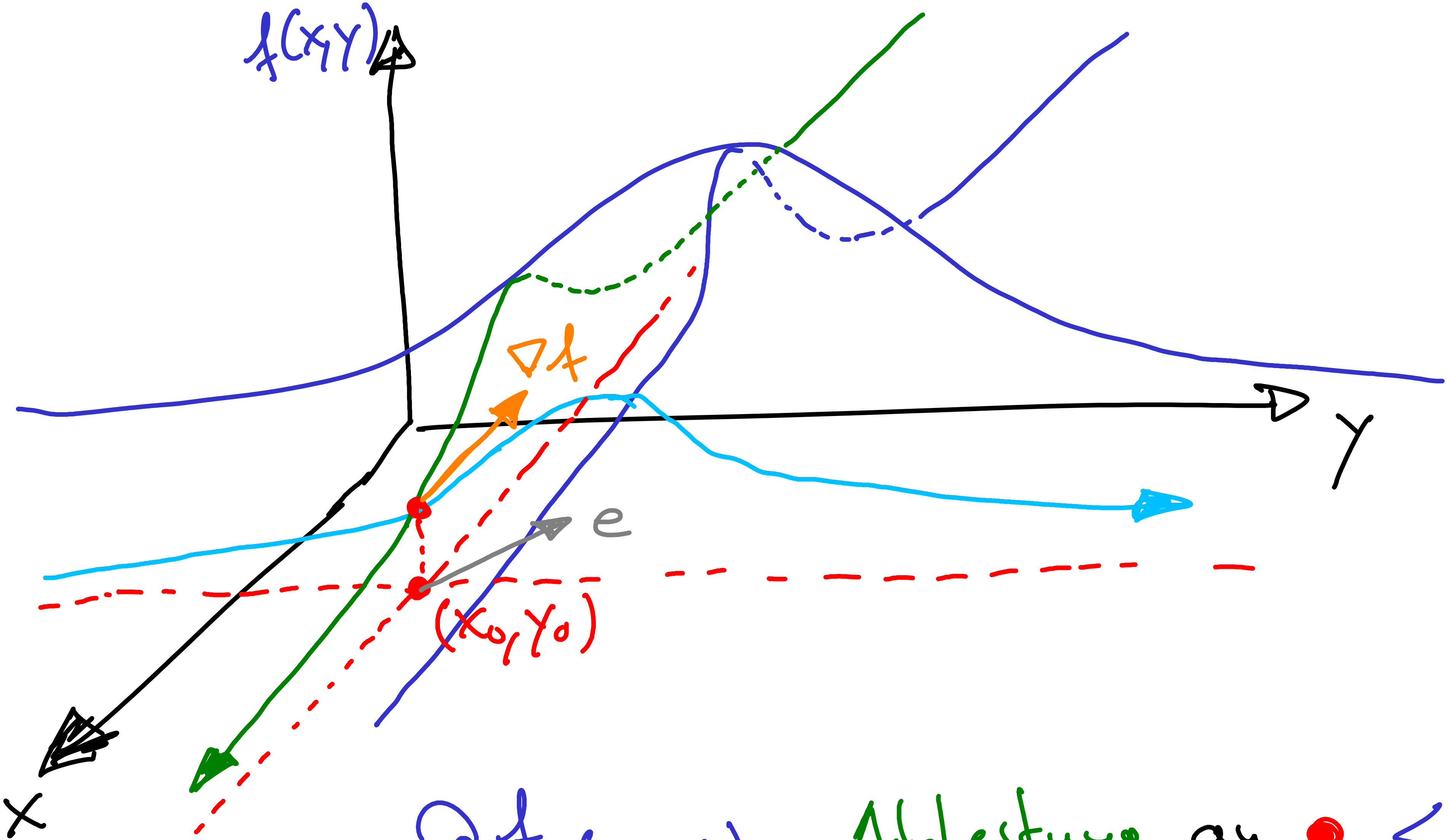
Newton: $K = m\,\ddot{f}(t)$

$$-g(0,0,1) = \ddot{f}(t)$$

$$f(t) = u + v t + \frac{1}{2}(0,0,-g)\,t^2$$

$$\dot{f}(t) = v + (0,0,-g)\,t$$

$$\ddot{f}(t) = (0,0,-g)$$



$\frac{\partial f}{\partial x}(x_0, y_0) =$ Ableitung an • < 0

$\frac{\partial f}{\partial y}(x_0, y_0) =$ Ableitung an • > 0