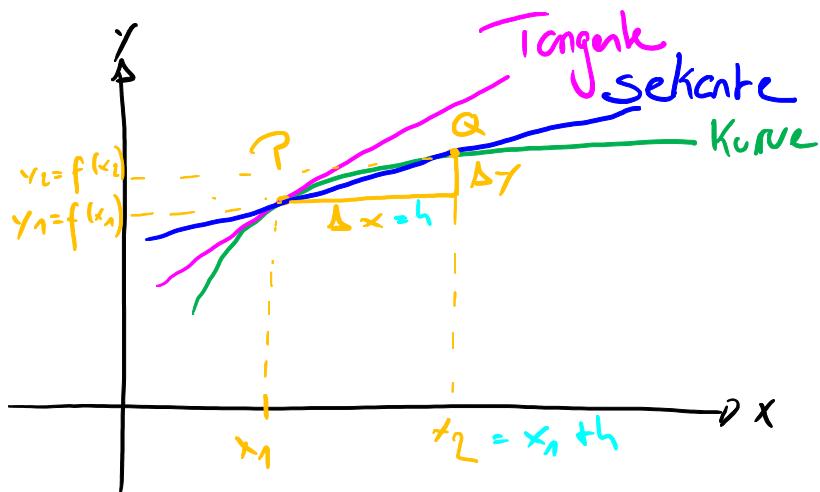


Kapitel 2.1



$$\frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{f(x_2) - f(x_1)}{x_2 - x_1} = \frac{f(x_1+h) - f(x_1)}{x_1+h - x_1} = \frac{f(x_1+h) - f(x_1)}{h}$$

Bsp.: Wie gross ist die Steigung von $y=x^2$ bei $x_1=2$?

Steigung der Sekante:

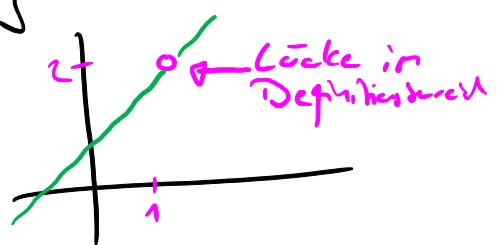
$$\frac{\Delta y}{\Delta x} = \frac{(2+h)^2 - 2^2}{h} = \frac{4+4h+h^2 - 4}{h} = \frac{4h+h^2}{h} = \underline{\underline{4+h}}$$

$$\lim_{h \rightarrow 0} (4+h) = 4$$

Kapitel 8.1

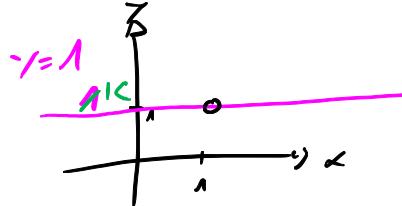
$$f(x) = \frac{x^2 - 1}{x - 1} \quad \mathbb{D} = \mathbb{R} \setminus \{1\}$$

$$= \frac{(x+1)(x-1)}{x-1} = \underbrace{x+1}_{\text{Wenn } x \neq 1}$$



$f(1)$ existiert nicht

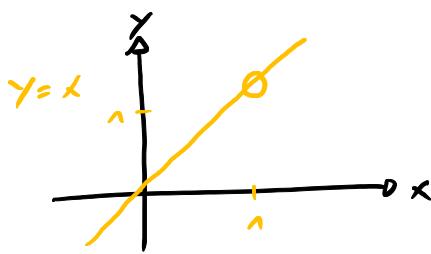
$$\begin{aligned} y &= x+1 \\ y &= x \end{aligned}$$



$$\lim_{x \rightarrow 1} 1 = 1$$

$$\text{Afg. } \lim_{x \rightarrow 1} K = 1$$

$$\lim_{x \rightarrow 0, 1} (x+1) = 1+1 = 2$$



$$\lim_{x \rightarrow 1} x = 1$$

$$\text{Afg. } \lim_{x \rightarrow x_0} x = x_0$$

