Kapitel 2.1

③

$f(x) = x^2 - 3$

$P(2,1)$

$x_1 = 2$

$f(2) = 1$

$f(2+h) = (2+h)^2 - 3$

$= 4 + 4h + h^2 - 3$

$$\frac{\Delta y}{\Delta x} = \frac{4 + 4h + h^2 - 3 - 1}{h} = \frac{4h + h^2}{h} = 4 + h$$

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

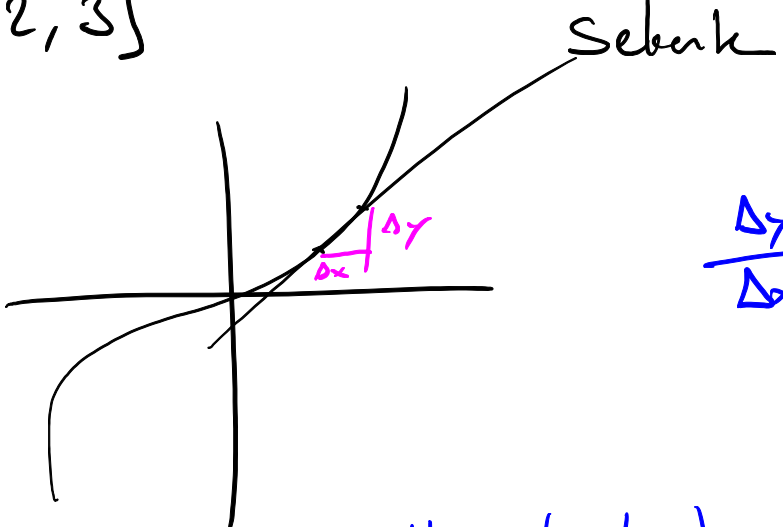
$y_T = 4x + b$

$1 = 4 \cdot 2 + b \qquad b = -7$

1 → gegebener Punkt (2,1)

① $y = x^3 + 1$

a) $[2, 3]$



$$\frac{\Delta y}{\Delta x} = \frac{28 - 9}{3 - 2} = \frac{19}{1} = 19$$

Punkt 1: (2 / 9) Punkt 2: (3 / 28)

④ $y = x^2 - 2x - 3$ $\quad P(2,-3)$

$f(x) = x^2 - 2x - 3$

$f(2) = 4 - 4 - 3 = -3$

$f(2+h) = (2+h)^2 - 2\cdot(2+h) - 3$

$= 4 + 4h + h^2 - 4 + 2h - 3$

$= 6h + h^2 - 3$

$= h^2 + 6h - 3$

$\frac{\Delta y}{\Delta x} = \frac{h^2 + 6h - 3}{h} =$