

9. minutest M1, 2.12.2025

a) Učete Taylorův polynom 2. stupně v 0  
pro funkci  $f(x) = \frac{1}{x^2+1}$

$$f(0) = \frac{1}{0^2+1} = 1$$

$$f'(x) = -\frac{2x}{(x^2+1)^2} \Big|_{x=0} = 0$$

$$f''(x) = -\frac{2(x^2+1)^2 - 2x \cdot 2x \cdot 2(x^2+1)}{(x^2+1)^4} \Big|_{x=0} = -\frac{2-0}{1} = -2$$

$$\begin{aligned} T(x) &= f(0) + f'(0) \cdot x + \frac{f''(0)}{2!} \cdot x^2 \\ &= 1 + 0 \cdot x + \frac{(-2)}{2} \cdot x^2 = \underline{\underline{1-x^2}} \end{aligned}$$

$$b) \frac{1}{1+0,03^2} \approx 1 - 0,03^2 = 1 - 0,0009 = \underline{\underline{0,9991}}$$

