

$$f(x) = \frac{1}{1-x}$$

$$a = 0 \quad u = 4$$

$$f(x) = \frac{1}{1-x}$$

$$f(0) = 1$$

$$f'(x) = \frac{1}{(1-x)^2}$$

$$f'(0) = 1$$

$$f''(x) = \frac{1 \cdot 2}{(1-x)^3}$$

$$f''(0) = 2$$

$$f'''(x) = \frac{1 \cdot 2 \cdot 3}{(1-x)^4}$$

$$f'''(0) = 3 \cdot 2 \cdot 1$$

$$f^{(4)}(x) = \frac{1 \cdot 2 \cdot 3 \cdot 4}{(1-x)^5}$$

$$f^{(4)}(0) = 4!$$

$$\vdots$$
$$f^{(n)}(x) = \frac{1 \cdot 2 \cdot 3 \cdots n}{(1-x)^{n+1}}$$

$$f^{(n)}(0) = n!$$

$$T_4^{\frac{1}{1-x}, 0}(x) = 1 + 1(x-0)^1 + \frac{2}{2}(x-0)^2 + \frac{6}{3!}(x-0)^3 + \frac{4!}{4!}(x-0)^4$$
$$= 1 + x + x^2 + x^3 + x^4$$

nebo

$$\frac{1}{1-x} = 1 + x + x^2 + x^3 + x^4 + o(x^4)$$

nebo

$$\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n \quad \text{pro } |x| < 1$$