Taylorovi redovi

1. $e^x = 1 + x + \dfrac{x^2}{2!} + \dfrac{x^3}{3!} + \ldots = \displaystyle\sum_{n=0}^{\infty} \frac{x^n}{n!},\ x \in \mathbb{R}$

2. $\cos x = 1 - \dfrac{x^2}{2!} + \dfrac{x^4}{4!} - \dfrac{x^6}{6!} + \ldots = \displaystyle\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!},\ x \in \mathbb{R}$

3. $\sin x = x - \dfrac{x^3}{3!} + \dfrac{x^5}{5!} - \dfrac{x^7}{7!} + \ldots = \displaystyle\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!},\ x \in \mathbb{R}$

4. $\dfrac{1}{1-x} = 1 + x + x^2 + x^3 + \ldots = \displaystyle\sum_{n=0}^{\infty} x^n,\ |x| < 1$

5. $(1+x)^\alpha = 1 + \binom{\alpha}{1} x + \binom{\alpha}{2} x^2 + \ldots = \displaystyle\sum_{n=0}^{\infty} \binom{\alpha}{n} x^n,\ |x| < 1,$

   pri čemu je $\binom{\alpha}{n} = \dfrac{\alpha(\alpha-1)\cdots(\alpha-n+1)}{n!},\ \binom{\alpha}{0} = 1$

6. $\sqrt{1+x} = (1+x)^{\frac{1}{2}} = 1 + \displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n-1}(2n-3)!!}{2^n\, n!}\, x^n,\ |x| < 1,$

   jer je $\binom{\frac{1}{2}}{n} = \dfrac{(-1)^{n-1}(2n-3)!!}{2^n\, n!}$

7. $\dfrac{1}{\sqrt{1+x}} = (1+x)^{-\frac{1}{2}} = 1 + \displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n(2n-1)!!}{2^n n!}\, x^n,\ |x| < 1,$

   jer je $\binom{-\frac{1}{2}}{n} = \dfrac{(-1)^n(2n-1)!!}{2^n n!}$

8. Ako je P polinom stupnja $m,$ onda je

   $$P(x) = P(0) + \frac{P'(0)}{1!}x + \frac{P''(0)}{2!}x^2 + \ldots = \sum_{n=0}^{m} \frac{P^{(n)}(0)}{n!}\, x^n,\ |x| < 1$$

9. $\ln(1+x) = \dfrac{x}{1} - \dfrac{x^2}{2} + \dfrac{x^3}{3} - \dfrac{x^4}{4} + \ldots = \displaystyle\sum_{n=1}^{\infty} (-1)^{n-1}\, \frac{x^n}{n},\ |x| < 1$

10. $\operatorname{arctg} x = \dfrac{x}{1} - \dfrac{x^3}{3} + \dfrac{x^5}{5} - \dfrac{x^7}{7} + \ldots = \displaystyle\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{2n+1},\ |x| < 1$

11. $\arcsin x = \displaystyle\sum_{n=0}^{\infty} \frac{(2n-1)!!}{2^n\, n!} \cdot \frac{x^{2n+1}}{2n+1},\ |x| < 1$