

Пример 1.

$$\varphi(x) = 1 + \int_0^x \varphi(t) dt$$

взяв $\varphi_0(x) = 0$.

$$\varphi_1(x) = 1$$

$$\varphi_2(x) = 1 + \int_0^x dt = 1 + x$$

$$\varphi_3(x) = 1 + \int_0^x (1+t) dt = 1 + x + \frac{x^2}{2!}$$

$$\varphi_4(x) = 1 + \int_0^x \left(1+t + \frac{t^2}{2!}\right) dt =$$

$$= 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!}$$

$$\varphi_n(x) = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots + \frac{x^{n-1}}{(n-1)!}$$

$$\varphi_n(x) \rightarrow e^x; \quad \underline{\varphi(x) = e^x}$$