

Kompleksianalyysin kaavoja integraalimuunnosten tenteissä:

$$e^z = \sum_{n=0}^{\infty} \frac{z^n}{n!}, \quad \sin z = \sum_{n=0}^{\infty} (-1)^n \frac{z^{2n+1}}{(2n+1)!}, \quad \cos z = \sum_{n=0}^{\infty} (-1)^n \frac{z^{2n}}{(2n)!}$$

$$f^{(n)}(z_0) = \frac{n!}{2\pi i} \oint_C \frac{f(z)}{(z-z_0)^{n+1}} dz, \quad n = 0, 1, 2, \dots$$

$$f(z) = \sum_{n=-\infty}^{\infty} a_n (z-z_0)^n, \quad a_n = \frac{1}{2\pi i} \oint_C \frac{f(\xi)}{(\xi-z_0)^{n+1}} d\xi, \quad n = 0, \pm 1, \pm 2, \dots$$

$$\operatorname{Res}_{z=z_0} f(z) = \frac{1}{(m-1)!} \lim_{z \rightarrow z_0} \left[\frac{d^{m-1}}{dz^{m-1}} ((z-z_0)^m f(z)) \right].$$

$$\int_{-\infty}^{\infty} f(x) dx = 2\pi i \sum_{z \in \mathbb{C}_+ \text{ napa}} \operatorname{Res} f(z)$$