$$|z_1 \pm z_2| \leq |z_1| + |z_2| \qquad\qquad |z_1 \pm z_2| \geq ||z_1| - |z_2||$$

$$\sin z = \sin x \cosh y + i \cos x \sinh y \qquad\qquad |\sin z|^2 = \sin^2 x + \sinh^2 y$$

$$\cos z = \cos x \cosh y - i \sin x \sinh y \qquad\qquad |\cos z|^2 = \cos^2 x + \sinh^2 y$$

$$\sin(iz) = i \sinh z \qquad\qquad \sinh(iz) = i \sin z$$

$$\cos(iz) = \cosh z \qquad\qquad \cosh(iz) = \cos z$$

$$\sinh z = \sinh x \cos y + i \cosh x \sin y \qquad\qquad |\sinh z|^2 = \sinh^2 x + \sin^2 y$$

$$\cosh z = \cosh x \cos y + i \sinh x \sin y \qquad\qquad |\cosh z|^2 = \sinh^2 x + \cos^2 y$$

$$\sin^{-1} z = -i \log\left[iz + (1 - z^2)^{1/2}\right]$$

$$\cos^{-1} z = -i \log\left[z + i(1 - z^2)^{1/2}\right]$$

$$\tan^{-1} z = \frac{i}{2} \log \frac{i + z}{i - z}$$

$$\sinh^{-1} z = \log\left[z + (z^2 + 1)^{1/2}\right]$$

$$\cosh^{-1} z = \log\left[z + (z^2 + 1)^{1/2}\right]$$

$$\tanh^{-1} z = \frac{1}{2} \log \frac{1 + z}{1 - z}$$

$$f(z_0) = \frac{1}{2\pi i}\int_C \frac{f(z)}{z-z_0}\,dz \qquad \Longleftrightarrow \qquad \int_C \frac{f(z)}{z-z_0}\,dz = 2\pi i f(z_0)$$

$$f^{(n)}(z_0) = \frac{n!}{2\pi i}\int_C \frac{f(z)}{(z-z_0)^{n+1}}\,dz \qquad \Longleftrightarrow \qquad \int_C \frac{f(z)}{(z-z_0)^{n+1}}\,dz = \frac{2\pi i}{n!} f^{(n)}(z_0)$$

$$f(z) = \sum_{n=1}^{\infty} \frac{f^n(z_0)}{n!}(z-z_0)^n \qquad |z-z_0| < R$$

$$\frac{1}{1-z} = \sum_{n=0}^{\infty} z^n \qquad e^z = \sum_{n=0}^{\infty} \frac{z^n}{n!}$$

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

$$\sinh z = \sum_{n=0}^{\infty} \frac{z^{2n+1}}{(2n+1)!} \qquad \cosh z = \sum_{n=0}^{\infty} \frac{z^{2n}}{(2n)!}$$