

$$\exp z=e^z=e^x\left(\cos y+i\sin y\right),z=x+iy;$$

$$\begin{array}{l} e^z_{z_1}.\\ e^{z_2}=\\ e^{z_1+z_2}\\ e^{z+2\pi i}=\\ e^z\\ e^{z+w}=\\ e^z\\ w=2\pi ki\left(k=0,\pm1,\pm2,\ldots\right). \end{array}$$

$$\begin{array}{l} \exp i\phi =\\ e^{i\phi} =\\ \cos \phi +\\ i\sin \phi\\ z =\\ re^{i\phi} =\\ r\left(\cos \phi +i\sin \phi\right)\\ \phi\\ -\pi <\\ \phi \leq\\ \frac{\pi}{4},-1,i,-i,1+i,1-i,-1+i,-1-i. \end{array}$$

$$\begin{array}{l} e^{\pm\frac{\pi}{2}i},e^{k\pi i}\left(k=0,\pm1,\pm2,\ldots\right).\\ e^{2+i},e^{2-3i},e^{3+4i},e^{-3-4i},-ae^{i\phi}\left(a>0,|\phi|\leq\pi\right),e^{-i\phi}\left(|\phi|\leq\pi\right). \end{array}$$

$$\begin{array}{l} \log z =\\ \ln r +\\ i\phi +\\ 2k\pi i\left(k=0,\pm1,\pm2,\ldots\right),z =\\ re^{i\phi},\\ \operatorname{Log} z =\\ \ln r +\\ i\phi\left(-\pi<\phi\leq\pi\right)\\ \operatorname{Log} z\\ z\\ 4,\log(-1),\operatorname{Log}(-1);\\ \log i,\operatorname{Log} i;\\ \log 1\pm i\sqrt{2};\\ \log(2-\\ 3i),\log(-2+\\ 3i).\\ \vdots\\ (-z)^2 =\\ z^2\\ 2\log(-z) =\\ 2\log z\\ \log(-z)=\log z. \end{array}$$

$$\begin{array}{l} f(z)\\ z\\ z=\\ \tilde{Q}=\\ z\\ f(z)\\ z\\ f(z) =\\ 2\log z\\ f(z) =\\ \log 1z\\ f(z) =\\ \log z-\\ \log(z+\\ 1)\\ f(z) =\\ \log z+\\ \log(z+\\ 1)\\ a\neq\\ 0\\ a^\alpha=\exp\{\alpha\log a\} \end{array}$$

$$\begin{array}{l} *\\ (1) \end{array}$$

$$\begin{array}{l} \exp z\\ e^z_z\\ a^\alpha=e^{\alpha\log a}\\ (*)\\ e^z=\\ \exp\{z\log e\}=\\ \exp\{z(1+ \end{array}$$