$$w = u + iv \in D$$

$$\mathbb{R}_{n:n} \xrightarrow{\;J_w\;} \mathbb{R}_{n:n}$$

$$\begin{array}{c|c} u^{-1}v & u^{-1} \\ \hline -u - vu^{-1}v & -vu^{-1} \end{array}$$

$$J_w^2 = \begin{array}{c|c} -1 & 0 \\ \hline 0 & -1 \end{array}$$

$$\mathbb{C}_n < 1{:}v + iu > \sqsubset \mathbb{C}_{n:n}$$

$$^{z}\begin{array}{c|c} a & b \\ \hline c & d \end{array} = \overbrace{a + zc}^{-1} \underbrace{b + zd}$$

$$\dot{z}\ \underline{^{z}\begin{array}{c|c} a & b \\ \hline c & d \end{array}} = - \overbrace{a + zc}^{-1} \dot{z}\, c\, \overbrace{a + zc}^{-1} \underbrace{b + zd} + \overbrace{a + zc}^{-1} \dot{z}\, d$$

$$= \overbrace{a + zc}^{-1} \dot{z}\ \underbrace{d - c\overbrace{a + zc}^{-1}\underbrace{b + zd}} = \overbrace{a + zc}^{-1} \dot{z}\ \overbrace{1 + ca^{-1}z}^{-1} \underbrace{d - ca^{-1}b}$$

$$d - c\overbrace{a + zc}^{-1}\underbrace{b + zd} = d - c\,\overbrace{a\underbrace{1 + a^{-1}zc}}^{-1}\underbrace{b + zd} = d - c\,\overbrace{1 + a^{-1}zc}^{-1} a^{-1}\underbrace{b + zd}$$

$$= d - \overbrace{1 + ca^{-1}z}^{-1} c\,a^{-1}\underbrace{b + zd} = \overbrace{1 + ca^{-1}z}^{-1} \overbrace{\underbrace{1 + ca^{-1}z}d - ca^{-1}\underbrace{b + zd}} = \overbrace{1 + ca^{-1}z}^{-1} \underbrace{d - ca^{-1}b}$$

$$^{z}_{\zeta}\overbrace{\nabla_{\underset{\cdot}{z}}\mathbb{1}} = {}_{\zeta}\overbrace{\underset{\cdot}{z}^{z}\underline{\mathbb{1}}} - \frac{i}{2}\overset{t}{\nabla}_{\zeta}\overbrace{z + \overset{*}{z}}^{-1/2}\underset{\cdot}{\overset{*}{z}}\overbrace{z + \overset{*}{z}}^{-1/2}\nabla_{\zeta}$$

$$\zeta = v^{-\,1/2}\left(\xi - \overset{*}{w}\eta\right) = v^{-\,1/2}\underbrace{\xi - u\eta} + i\,v^{\,1/2}\eta$$

$$\bar{\zeta} = v^{-\,1/2}\left(\xi - w\eta\right) = v^{-\,1/2}\underbrace{\xi - u\eta} - i\,v^{\,1/2}\eta$$

$$\nabla^{\mathbb{C}}_{\zeta} = \frac{\partial}{\partial\zeta} + \zeta$$

$$\nabla^{\mathbb{C}}_{\bar{\zeta}} = \frac{\partial}{\partial\bar{\zeta}} - \bar{\zeta}$$

$$\nabla^{\mathbb{R}}_{\xi} = \frac{\partial}{\partial\xi} + i\,v^{\,1/2}\eta$$

$$\nabla^{\mathbb{R}}_{\eta} = \frac{\partial}{\partial\eta} - i\,v^{-\,1/2}\underbrace{\xi - u\eta}$$