

$$\overline{yg - yg} \Delta = \overline{e^{xg} \Delta}^{1/2} \overline{x - y} \Delta \overline{e^{yg} \Delta}^{1/2}$$

$$x t_a = x + a \Rightarrow x t_a - y t_a = \underline{x + a} - \underline{y + a} = x - y$$

$$z t_a = i \Rightarrow e^{z t_a} = ei = e \Rightarrow e^{z t_a} \Delta = e \Delta = 1$$

$$g \in \mathbb{C} | X_\Delta \Rightarrow xg - yg = \underline{x - y} g$$

$$z g = g \Rightarrow xg - yg \Delta = \underline{x - y} g \Delta = x - y \Delta e^g \Delta \Rightarrow xg - yg \overline{\Delta} = x - y \overline{\Delta} e^g \overline{\Delta} =$$

$$= e^g \overline{\Delta}^{1/2} x - y \overline{\Delta}^{1/2} e^g \overline{\Delta}^{1/2} = e^{xg} \overline{\Delta}^{1/2} x - y \overline{\Delta}^{1/2} e^{yg} \overline{\Delta}^{1/2}$$

$$xj = \overline{x}^{-1} \Rightarrow xj - yj = \overline{x}^{-1} - \overline{y}^{-1} = -\overline{x}^{-1} \underline{x - y} \overline{y}^{-1}$$

$$z j = -\overline{P}_z^{-1}$$

$$e^{z j} = -e \overline{P}_z^{-1} = -\overline{z}^{-2} \Rightarrow e^{z j} \overline{\Delta} = \overline{z}^{-2} \overline{\Delta} \Rightarrow e^{z j} \overline{\Delta}^{1/2} = \overline{z}^{-1} \overline{\Delta}^{-1/2}$$

$$\Rightarrow xj - yj \overline{\Delta} = \overline{x}^{-1} x - y \overline{\Delta} \overline{y}^{-1} = e^{xj} \overline{\Delta}^{1/2} x - y \overline{\Delta}^{1/2} e^{yj} \overline{\Delta}^{1/2}$$

$$X_{\Delta_\infty} \mathbb{C} \ni \gamma$$

$$\gamma \overset{t}{\times} \gamma = \int_{dx}^X x \overline{\gamma} \int_{dy}^X y \overline{\gamma} x - y \overline{\Delta}^{-t}$$

$$\overline{g \overset{t}{\times} \gamma} = xg \overline{\gamma} e^{xg} \overline{\Delta}^{d/r - t/2}$$

$$\overbrace{g_X^t} \overbrace{\gamma_X^t} \overbrace{g_X^t} \overbrace{\gamma_X^t} = \overbrace{\gamma_X^t} \overbrace{\gamma_X^t}$$

$$\det z_g = e^{zg} \Delta^{d/r}$$

$$w = zg \Rightarrow dw = dz \overline{\det z_g} = dz e^{zg} \frac{d/r}{\Delta}$$

$$\begin{aligned} \text{LHS} &= \int_{dx}^X \overbrace{x} \overbrace{g_X^t} \overbrace{\gamma_X^t} \int_{dy}^X \overbrace{y} \overbrace{g_X^t} \overbrace{\gamma_X^t} x - y \frac{-t}{\Delta} = \int_{dx}^X xg \overline{\gamma} e^{xg} \frac{d/r}{\Delta} \int_{dy}^X yg \overline{\gamma} e^{yg} \frac{d/r}{\Delta} e^{yg} \frac{-t/2}{\Delta} x - y \frac{-t}{\Delta} e^{xg} \frac{-t/2}{\Delta} \\ &= \int_{dx}^X xg \overline{\gamma} e^{xg} \frac{d/r}{\Delta} \int_{dy}^X yg \overline{\gamma} e^{yg} \frac{d/r}{\Delta} e^{yg} \frac{-t/2}{\Delta} x - y \frac{-t}{\Delta} e^{xg} \frac{-t/2}{\Delta} = \int_{dx}^X xg \overline{\gamma} e^{xg} \frac{d/r}{\Delta} \int_{dy}^X yg \overline{\gamma} e^{yg} \frac{d/r}{\Delta} \underbrace{e^{xg} \frac{1/2}{\Delta} x - y \frac{-t}{\Delta} e^{yg} \frac{1/2}{\Delta}}_{-t} \\ &= \int_{dx}^X xg \overline{\gamma} e^{xg} \frac{d/r}{\Delta} \int_{dy}^X yg \overline{\gamma} e^{yg} \frac{d/r}{\Delta} xg - yg \frac{-t}{\Delta} \begin{matrix} u \equiv xg \\ v \equiv yg \end{matrix} \int_{du}^X u \overline{\gamma} \int_{dv}^X v \overline{\gamma} u - v \frac{-t}{\Delta} = \text{RHS} \end{aligned}$$