$$p{:}q \in \mathbb{N} \Longrightarrow \int_{dx}^{0|1} x^p \, (1-x)^q = \frac{p!q!}{(p+q+1)!} = \frac{\Gamma_{p+1}\Gamma_{q+1}}{\Gamma_{p+q+2}} = B_{p+:q+}$$

$$0 = q{:} \quad \int_{dx}^{0|1} x^p = \frac{x^{p+1}}{p+1}\Big|_0^1 = \frac{1}{p+1} = \frac{p!0!}{(p+0+1)!}$$

$$0 \leqslant q \curvearrowright q+1{:} \quad \int_{dx}^{0|1} x^p \, (1-x)^{q+1} = \frac{x^{p+1}}{p+1} (1-x)^{q+1} \Big|_0^1 - \frac{q+1}{p+1} (-1) \int_{dx}^{0|1} x^{p+1} \, (1-x)^q$$

$$= \frac{q+1}{p+1} \int_{dx}^{0|1} x^{p+1} \, (1-x)^q \underset{\text{Ind}}{=} \frac{q+1}{p+1} \frac{(p+1)!q!}{(p+q+2)!} = \frac{p! \, (q+1)!}{(p+q+2)!}$$

$$\frac{d\bar{z}dz}{2i} = dxdy = rdrd\vartheta$$

$$d\,\bar{z}\,dz = (dx - idy) \wedge (dx + idy) = 2idxdy$$

$$\Gamma_\nu = \int_{dt}^{0|\infty} e^{-t} \, t^{\nu-1}$$

$$\nu \, \Gamma_\nu = \Gamma_{\nu+1}$$

$$\Gamma_{n+1} = n!$$

$$\text{Poch}: \quad (\nu)_m = \frac{\Gamma_{\nu+m}}{\Gamma_\nu} = \nu \, (\nu+1) \cdots (\nu+m-1)$$

$$(1-x)^{-\nu} = \sum_m^{\mathbb{N}} \frac{(\nu)_m}{m!} x^m = \sum_m^{\mathbb{N}} (\nu)_m \frac{x^m}{m!}$$

$$(1+x)^{\alpha} = \sum_m^{\mathbb{N}} \begin{bmatrix} \alpha \\ m \end{bmatrix} x^m$$

$$\begin{bmatrix} \alpha \\ m \end{bmatrix} = \frac{\alpha!}{m!\,(\alpha-m)!} = \frac{\alpha\,(\alpha-1)\cdot\cdot(\alpha+1-m)}{m!}$$

$$(1-x)^{-\nu} = \sum_m^{\mathbb{N}} \begin{bmatrix} -\nu \\ m \end{bmatrix} (-1)^m x^m$$

$$\begin{bmatrix} -\nu \\ m \end{bmatrix} (-1)^m = (-1)^m \frac{(-\nu)\,(-\nu-1)\cdot\cdot(-\nu+1-m)}{m!} = \frac{\nu\,(\nu+1)\cdot\cdot(\nu-1+m)}{m!} = \frac{(\nu)_m}{m!}$$

$$\nu \int^{\mathbb{B}} \frac{d\bar{z}dz}{2\pi i} \left(1-z\bar{z}\right)^{\nu-2} \bar{z}^m z^m = \frac{m!}{(\nu)_m}$$

$$\text{LHS} = \frac{\nu}{\pi} \int_{d\vartheta}^{0|2\pi} \int_{dr}^{0|1} r\left(1-r^2\right)^{\nu-2} r^{2m} = 2\nu \int_{dr}^{0|1} r\left(1-r^2\right)^{\nu-2} r^{2m}$$

$$= \nu \int_{dx}^{0|1} (1-x)^{\nu-2} x^m = \nu \frac{(\nu-2)!m!}{(\nu+m-1)!} = \nu \frac{\Gamma_{\nu-1} m!}{\Gamma_{\nu+m}} = \frac{\Gamma_\nu m!}{\Gamma_{\nu+m}} = \text{RHS}$$

$$\text{W-Mass} \;\; \mu_\nu(dz) = \nu \frac{d\bar{z}dz}{2\pi i} \left(1-z\bar{z}\right)^{\nu-2}$$

$$\text{ONB}: \quad \llcorner z^m \lrcorner_\nu = \frac{(\nu)_m^{1/2}}{\sqrt{m!}} z^m$$

$$\text{kernel } {}^{z}K_{w}^{\nu} = \left(1 - z\bar{w}\right)^{-\nu}$$

$$\text{LHS } = \sum_{m}^{\mathbb{N}} \llcorner z^{m} \lrcorner_{\nu} \llcorner \bar{w}^{m} \lrcorner_{\nu} = \sum_{m}^{\mathbb{N}} \frac{(\nu)_{m}}{m!} \left(z\bar{w}\right)^{m} = \left(1 - z\bar{w}\right)^{-\nu}$$