

$$\underbrace{\gamma^*}_{z} = \underbrace{z^{\nu} z^{\bar{\gamma}}}_{\mathbb{C}z}$$

$$\underbrace{z^{-\nu}}_{\mathbb{C}z} \underbrace{\gamma^*}_{z} = \underbrace{z^{-\nu}}_{\mathbb{C}z} k_z \underbrace{\gamma^*}_{z} k_z = \underbrace{z^{-\nu}}_{\mathbb{C}z} \underbrace{\gamma^*}_{z} \underbrace{z^{-\nu}}_{\mathbb{C}z} = \underbrace{z^{-\nu}}_{\mathbb{C}z} \underbrace{\gamma^*}_{z} \underbrace{z^{-\nu}}_{\mathbb{C}z} = \underbrace{z^{-\nu}}_{\mathbb{C}z} \underbrace{\gamma^*}_{z} \underbrace{z^{-\nu}}_{\mathbb{C}z} = \underbrace{z^{\gamma}}_{z}$$

$$\int_{dz} \underbrace{\partial^{\gamma} \frac{\gamma}{z^{-\nu}}}_{z} = (-1)^{\gamma} \int_{dz} \underbrace{\frac{z^{\gamma}}{z^{-\nu}}}_{z} \underbrace{\partial^{\gamma} \mathbb{J}}_{z}$$

$$\underbrace{w^{\nu}}_{\mathbb{C}z} = \underbrace{w^{\gamma}}_{z} z^{\bar{\gamma}} \Rightarrow \underbrace{z^{\nu}}_{\mathbb{C}z} = \underbrace{\gamma^*}_{z} z^{\bar{\gamma}} \Rightarrow \partial^{\gamma} \frac{\gamma}{z^{-\nu}} = \partial^{\gamma} \underbrace{\gamma^*}_{z} z^{\bar{\gamma}} = \partial^{\gamma} \underbrace{\gamma^*}_{z} z^{\bar{\gamma}} \Rightarrow \underbrace{\partial^{\gamma} \frac{\gamma}{z^{-\nu}}}_{z} = \underbrace{\partial^{\gamma} \gamma^*}_{z} z^{\bar{\gamma}}$$

$$\Rightarrow \int_{dz} \underbrace{\partial^{\gamma} \frac{\gamma}{z^{-\nu}}}_{z} = \int_{dz} \underbrace{\partial^{\gamma} \gamma^*}_{z} z^{\bar{\gamma}} = (-1)^{\gamma} \int_{dz} \underbrace{\gamma^*}_{z} \underbrace{\partial^{\gamma} \mathbb{J}}_{z} = (-1)^{\gamma} \int_{dz} \underbrace{z^{\gamma} z^{\bar{\gamma}}}_{z} \underbrace{\partial^{\gamma} \mathbb{J}}_{z} = (-1)^{\gamma} \int_{dz} \underbrace{\frac{z^{\gamma}}{z^{-\nu}}}_{z} \underbrace{\partial^{\gamma} \mathbb{J}}_{z}$$

$$z \underline{\mathcal{J} * \mathcal{J}} = \frac{(-1)^\gamma}{\nu_{\underline{m}}} z \Delta_z^p \overbrace{\partial^\gamma \Delta^{-p} \mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}}^z$$

$$\int_{\mu_z^\nu} z \mathcal{J} z \bar{\eta} z \underline{\mathcal{J} * \mathcal{J}} = \int_{\mu_z^0} z \mathcal{J} z \bar{\eta} B \underbrace{\frac{\mathcal{J} \mathcal{J}}{\mathbb{O}_{\mathbb{C}} z}^{-\nu}} \times g_z$$

$$\int_{\mu_z^\nu} z \mathcal{J} z \bar{\eta} z \underline{\mathcal{J} * \mathcal{J}} = \int_{\mu_z^0} z \mathbb{O}_{\mathbb{C}} z^\nu z \mathcal{J} z \bar{\eta} z \underline{\mathcal{J} * \mathcal{J}} = \int_{\mu_z^0} z \underbrace{\mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}} z \underline{\mathcal{J} * \mathcal{J}} = \text{tr } \mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J} \underline{\mathcal{J} * \mathcal{J}} = \mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J} \underline{\mathcal{J} * \mathcal{J}}$$

$$= \mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J} \underline{\mathcal{J} * \mathcal{J}} = \overline{\mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}} \underline{\mathcal{J} * \mathcal{J}} = \underline{\mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}} \underline{\mathcal{J} * \mathcal{J}} = \underline{\mathcal{J} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}} \underline{\mathcal{J} * \mathcal{J}} = \int_{\mu_z^\nu} z \mathcal{J} z \bar{\eta} \overbrace{\mathcal{J} \mathcal{J}}^z = \int_{\mu_z^\nu} z \mathcal{J} z \bar{\eta} \int_{\mu_w^0} z \mathbb{O}_{\mathbb{C}} w^{-\nu} \frac{w \mathcal{J} w \mathcal{J}}{w \mathbb{O}_{\mathbb{C}} w^{-\nu}}$$

$$= \int_{\mu_z^0} z \mathcal{J} z \bar{\eta} \int_{\mu_w^0} \frac{\overbrace{\mathbb{O}_{\mathbb{C}} w^{-\nu}}^2}{z \mathbb{O}_{\mathbb{C}} z^{-\nu} w \mathbb{O}_{\mathbb{C}} w^{-\nu}} \frac{w \mathcal{J} w \mathcal{J}}{w \mathbb{O}_{\mathbb{C}} w^{-\nu}} = \int_{\mu_z^0} z \mathcal{J} z \bar{\eta} \int_{\mu_w^0} z \mathcal{B}_w \frac{w \mathcal{J} w \mathcal{J}}{w \mathbb{O}_{\mathbb{C}} z^{-\nu}} = \int_{\mu_z^0} z \mathcal{J} z \bar{\eta} \underbrace{\mathcal{B} \frac{\mathcal{J} \mathcal{J}}{\mathbb{O}_{\mathbb{C}} z}^{-\nu}} = \frac{1}{\nu_{\underline{m}}} \int_{\mu_z^0} z \mathcal{J} z \bar{\eta} \underbrace{\mathbb{O}_{\mathbb{C}}^{-\nu} L_{\underline{m}} \frac{\mathcal{J} \mathcal{J}}{\mathbb{O}_{\mathbb{C}} z}^{-\nu}}$$

$$= \frac{1}{\nu_{\underline{m}}} \int_{\mu_z^0} z \mathcal{J} z \bar{\eta} \underbrace{\mathfrak{R}_{\underline{m} \gamma} \mathcal{J}} z \overbrace{\partial^\gamma \frac{\mathcal{J}}{\mathbb{O}_{\mathbb{C}} z}^{-\nu}}^z = \frac{1}{\nu_{\underline{m}}} \int_{\mu_z^0} z \Delta_z^{-p} z \mathcal{J} z \bar{\eta} \underbrace{\mathfrak{R}_{\underline{m} \gamma} \mathcal{J}} z \overbrace{\partial^\gamma \frac{\mathcal{J}}{\mathbb{O}_{\mathbb{C}} z}^{-\nu}}^z$$

$$= \frac{(-1)^\gamma}{\nu_{\underline{m}}} \int_{\mu_z^0} dz z \overbrace{\partial^\gamma \Delta^{-p} \mathcal{J} \bar{\eta} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}}^z \frac{z \mathcal{J}}{z \mathbb{O}_{\mathbb{C}} z^{-\nu}} = \frac{(-1)^\gamma}{\nu_{\underline{m}}} \int_{\mu_z^0} z \Delta_z^p \overbrace{\partial^\gamma \Delta^{-p} \mathcal{J} \bar{\eta} \mathfrak{R}_{\underline{m} \gamma} \mathcal{J}}^z \frac{z \mathcal{J}}{z \mathbb{O}_{\mathbb{C}} z^{-\nu}}$$