

$$1 \in \mathbb{1} \text{ mod } \mathbb{1}$$

$$\tau \in \mathbb{1} = \text{Hom}(\mathbb{1}, \mathbb{1})$$

$$\mathbb{1} \triangleleft \mathbb{1} \xleftarrow[\tau]{1\mathbb{X}} \mathbb{1} \triangleleft \mathbb{1}$$

$$\tau \mathbb{X} 1 \ddot{\mathbb{X}} 1 = 1 \mathbb{X} \tau \ddot{\mathbb{X}} 1$$

$$\tau \mathbb{X} 1 \mathbb{X} \tau \ddot{\mathbb{X}} 1 = \sum_{0 \leq m \leq n} (-1)^m 1 \mathbb{X} \tau^m \ddot{\mathbb{X}} 1$$

$$\tau = 0$$

$$\tau 1 = 1 = \tau 1 = \tau | 1$$

$$\tau \mathbb{X} 1 + 1 \mathbb{X} \tau = \tau 1 I$$

$$\overline{\tau \mathbb{X} 1 - \tau 1 I} \tau \ddot{\mathbb{X}} 1 = \tau \mathbb{X} 1 \tau \ddot{\mathbb{X}} 1 - \tau 1 \tau \ddot{\mathbb{X}} 1$$

$$= \sum_{0 \leq m \leq n} (-1)^m 1 \mathbb{X} \tau^m \ddot{\mathbb{X}} 1 - \tau 1 \tau \ddot{\mathbb{X}} 1 = 1 \mathbb{X} \sum_{1 \leq m \leq n} (-1)^m 1 \mathbb{X} \tau^m \ddot{\mathbb{X}} 1$$

$$= -1 \mathbb{X} \sum_{1 \leq m \leq n} (-1)^{m-1} 1 \mathbb{X} \tau^m \ddot{\mathbb{X}} 1 = -1 \mathbb{X} \overline{\tau 1 \tau \ddot{\mathbb{X}} 1} = -1 \mathbb{X} \tau 1 \tau \ddot{\mathbb{X}} 1$$

$$\mathbb{1} \text{ abel} \Rightarrow \tau \tau + \tau \tau = 0$$

$$\begin{aligned} \tau \tau \mathbb{X} &= \tau \tau I - \mathbb{X} \tau = \tau \tau - \overline{\tau \mathbb{X}} \tau \\ &= \tau \tau + \overline{\mathbb{X} \tau - \tau I} \tau = \tau \tau + \mathbb{X} \tau \tau - \tau \tau \\ &\stackrel{\text{ind}}{=} \tau \tau - \mathbb{X} \tau \tau - \tau \tau = -\tau \tau \mathbb{X} \end{aligned}$$