$$\mathbb{h}_{\triangle}\mathbb{1}^{\mathbb{N}} = \sum_{m} \mathbb{h}_{\triangle}\mathbb{1}^{m} \in \triangleleft^{\mathbb{N}}\mathbb{K}$$

$$\mathbb{h}_{\triangle}\mathbb{1}^{m} = \frac{{}_{1+m}\mathbb{h} \xleftarrow{\P} \mathbb{1}}{\begin{bmatrix} \mathbb{h} \times {}_{0}\mathbb{h} \\ + \\ \mathbb{h} \times {}_{m}\mathbb{h} \end{bmatrix} \P = \mathbb{h} \ltimes \underbrace{\begin{bmatrix} \mathbb{h} \times {}_{0}\mathbb{h} \\ + \\ \mathbb{h} \times {}_{m}\mathbb{h} \end{bmatrix} \P}}$$

$$\mathbb{h}_{\underset{\sim}{\triangle}}\mathbb{1}^{m} = \frac{{}_{m}\mathbb{h} \xleftarrow{\daleth} \mathbb{1}}{\begin{bmatrix} \mathbb{h} \times {}_{1}\mathbb{h} \\ + \\ 1 \\ + \\ \mathbb{h} \times {}_{m}\mathbb{h} \end{bmatrix} \daleth = 0}$$

$$\begin{array}{ccc} \mathbb{h}_{\triangle}\mathbb{1}^{m} & \xleftarrow{\quad d_{m-1} \quad} & \mathbb{h}_{\triangle}\mathbb{1}^{m} \\ \downarrow \asymp & & \downarrow \asymp \\ \mathbb{h}_{\underset{\sim}{\triangle}}\mathbb{1}^{m} & \xleftarrow[\quad \underset{\sim}{d}_{m-1} \quad]{} & \mathbb{h}_{\underset{\sim}{\triangle}}\mathbb{1}^{m} \end{array}$$

$$d \underbrace{\P \boxtimes \P'} = \underbrace{d\P} \boxtimes \P' + \P \boxtimes \underbrace{d\P'}$$