

$$3.2.9 \quad [A, [B, C]] = [B, [A, C]] - [C, [A, B]]$$

\*

$$[A, B] = AB - BA \neq 0$$

$$① \quad [B, C] = BC - CB$$

$$\begin{aligned} [A, [B, C]] &= (A(BC - CB)) - ((BC - CB)A) \\ &= ABC - ACB - BCA + CBA \end{aligned}$$

$$② \quad [A, C] = AC - CA$$

$$\begin{aligned} [B, [A, C]] &= (B(AC - CA)) - ((AC - CA)B) \\ &= BAC - BCA - ACB + CAB \end{aligned}$$

$$③ \quad [A, B] = AB - BA$$

$$\begin{aligned} [C, [A, B]] &= (C(AB - BA)) - ((AB - BA)C) \\ &= CAB - CBA - ABC + BAC \end{aligned}$$

$$② - ③ =$$