

$$z \times \frac{a \mid b}{\overset{*}{b} \mid \overset{*}{a}} = \frac{b + z\overset{*}{a}}{a + z\overset{*}{b}}$$

$$\frac{\vartheta a \mid \vartheta b}{(\overset{*}{\vartheta b}) \mid (\overset{*}{\vartheta a})} = \frac{\vartheta a \mid \vartheta b}{\overset{*}{b}/\vartheta \mid \overset{*}{a}/\vartheta}$$

$$z \times \frac{\vartheta a \mid \vartheta b}{(\overset{*}{\vartheta b}) \mid (\overset{*}{\vartheta a})} = \frac{\vartheta b + z\vartheta\overset{*}{a}}{a/\vartheta + z\overset{*}{b}/\vartheta} = \vartheta^2 \frac{b + z\overset{*}{a}}{a + z\overset{*}{b}}$$

$$z \times \underline{\mathbb{L} \mathbb{L}'} = \underline{z \times \mathbb{L}} \times \mathbb{L}'$$

$$z \times \frac{a \mid b}{\overset{*}{b} \mid \overset{*}{a}} \frac{a' \mid b'}{\overset{*}{b'} \mid \overset{*}{a'}} = \frac{a \mid b}{\overset{*}{b} \mid \overset{*}{a}} \left(\frac{a'z + b'}{\overset{*}{b'}z + \overset{*}{a}'} \right) = \frac{a \frac{a'z + b'}{\overset{*}{b'}z + \overset{*}{a}'} + b}{\overset{*}{b} \frac{a'z + b'}{\overset{*}{b'}z + \overset{*}{a}'} + \overset{*}{a}} = \frac{a \overbrace{a'z + b'} + b \overbrace{\overset{*}{b'}z + \overset{*}{a}'}}{\overset{*}{b} \overbrace{a'z + b'} + \overset{*}{a} \overbrace{\overset{*}{b'}z + \overset{*}{a}'}}$$

$$= \frac{\overbrace{aa' + bb'} z + \overbrace{ab' + ba'}}{\overbrace{ba' + \overset{*}{a}b'} z + \overbrace{bb' + \overset{*}{a}a'}} = \frac{aa' + bb'}{\overset{*}{ba'} + \overset{*}{a}b'} \mid \frac{ab' + ba'}{\overset{*}{bb'} + \overset{*}{a}a'} (z) = \frac{a \mid b}{\overset{*}{b} \mid \overset{*}{a}} \frac{a' \mid b'}{\overset{*}{b'} \mid \overset{*}{a}'} (z)$$