

$$\begin{aligned}
\log \left(\tilde{Z}^s(c(f)) \right) - \left(\sum_{i=1}^g \begin{array}{c} \bullet \\ \vdots \\ \bullet \end{array} \begin{array}{c} i^+ \\ \\ i^- \end{array} \right) &= \log \left(\tilde{Z}^s(c(h)) \right) - \left(\sum_{i=1}^g \begin{array}{c} \bullet \\ \vdots \\ \bullet \end{array} \begin{array}{c} i^+ \\ \\ i^- \end{array} \right) \\
&= - \left(\eta^{-1} \tau_1^a(h) \right)_{|a_i \mapsto i^-} \\
&= - \left(\eta^{-1} \tau_1^a(f) \right)_{|a_i \mapsto i^-}^s,
\end{aligned}$$