

$$\begin{aligned}
(g \circ \text{Tr}_{X,Z}^Z(f))^{\star}(x') &= \bigcup_{x \in g^{\star}(x')} \text{Tr}_{X,Z}^Z(f)^{\star}(x) \\
&= \bigcup_{x \in g^{\star}(x')} \left\{ y \in Y \mid \bigvee_{z \in Z} \langle y, z \rangle \in f^{\star}(x, z) \right\} \\
&= \left\{ y \in Y \mid \bigvee_{z \in Z} \langle y, z \rangle \in \bigcup_{x \in g^{\star}(x')} f^{\star}(x, z) \right\}.
\end{aligned}$$