

$$\begin{aligned}
 (\textcolor{green}{\mu}_x \circ \textcolor{blue}{; } \textcolor{violet}{M})(\textcolor{orange}{[[a, b]}, \textcolor{magenta}{[c, d]}]) &= \textcolor{violet}{M}(f)(\textcolor{orange}{[a, d]}) \\
 &= \textcolor{orange}{[f(a), f(d)]}
 \end{aligned}$$