Let α be a path in X from x_0 to x_1. Let β be a path in X from x_1 to x_2. Show that if $\gamma = \alpha * \beta$ then $\hat{\gamma} = \hat{\beta} \circ \hat{\alpha}$

for any $[f]$

$$\hat{\gamma}([f]) = [\overline{\alpha * \beta}] * [f] * [\alpha * \beta]$$

$$= \overline{\beta} * \overline{\alpha} * [f] * \alpha * \beta$$

$$= \hat{\beta}(\overline{\alpha} * [f] * \alpha) = \hat{\beta} \circ \hat{\alpha}([f])$$