

Solution to Exercise on Dehn twists.

$$\sigma_{\gamma_1} \sigma_{\gamma_2} (\gamma_2) = \sigma_{\gamma_1} \left(\begin{array}{c} \bullet \\ \downarrow \\ \bullet \end{array} \right) = \begin{array}{c} \bullet \\ \nearrow \\ \bullet \\ \searrow \\ \bullet \end{array}$$

$$\sigma_{\gamma_2} \sigma_{\gamma_1} (\gamma_2) = \sigma_{\gamma_2} \left(\begin{array}{c} \bullet \\ \curvearrowright \\ \bullet \\ \curvearrowleft \\ \bullet \end{array} \right) = \text{[A dense, tangled scribble representing a complex deformation of the path.]}$$

$$= \begin{array}{c} \bullet \\ \curvearrowright \\ \bullet \\ \curvearrowleft \\ \bullet \end{array}$$

$$= \begin{array}{c} \bullet \\ \curvearrowright \\ \bullet \\ \curvearrowleft \\ \bullet \end{array}$$