Reading in the Text

§ 10.7

Exercises

1. Given three non-parallel lines $a$, $b$, and $c$ in the plane that intersect in a single common point $P$, construct a line $l$ so that the product of the reflections in the three given lines is the reflection in $l$, i.e.,

$$\sigma_c \circ \sigma_b \circ \sigma_a = \sigma_l .$$

2. Let $\rho$ be the rotation of the plane about the point $P$ through the angle $\theta$ and $\tau$ the translation of the plane by the vector $V$. Relative to the given objects $P$, $V$, and $\theta$, provide a geometric description of:

(a) $\rho \tau \rho^{-1}$.
(b) $\tau \rho \tau^{-1}$.

3. A rotation of the plane is determined by specifying a point as its center and an angle. Relative to that method of description explain how the composition of two given rotations about different centers may be constructed.