Assignment 10

Oral question

1. Assume $a, b, c \in \mathbb{R}$ satisfy $a^2 + bc = 1$, and let $T : \mathbb{C} \to \mathbb{C}$ be given by

$$T(z) = \frac{a\overline{z} + b}{c\overline{z} - a}.$$

   Show that $T(T(z)) = z$ for all z. (All reflections of the Poincaré upper half plane model are represented by such a function.)

Question to be answered in writing

1. Find the Poincaré distance between the points $P = 3 + i$ and $Q = (6 + \sqrt{2})/2 + \sqrt{2}/2 \cdot i$ (in the Poincaré upper half plane model).