1. Find the linear fractional transformation which carries 0, $i$, $-i$ into 1, $-1$, 0.
2. Find the linear fractional transformation which carries the circle $|z| = 2$ into $|z+1| = 1$, the point $-2$ into the origin, and the origin into $i$. 
3. Compute

\[ \int_C \frac{dz}{z^2 - 1} \]

where \( C \) is the circle \(|z| = 2\), with positive (counterclockwise) orientation.
4. Compute

\[ \int_{|z|=1} |z - 1| \cdot |dz| \]