1. Find all values of $\log(\log i)$ in form of $x + yi$.

2. Find the image of the unit circle under the map $f = z + 1/z$.

3. Find the radius of the circle such that the image of that circle under the map $f = z + 1/z$ is the ellipse $\dfrac{x^2}{25} + \dfrac{y^2}{9} = \dfrac{1}{4}$.

4. Show that $f = \arg z$ for $z \neq 0$ and $-\pi \leq \arg z < \pi$ is discontinuous on the negative real axis.

5. Define $f = z^{a+bi}$ on the principal branch where $a$ and $b$ are positive real number. Show that $f$ is one to one if and only if $a^2 + b^2 < a$.

6. Calculate $\int_C \dfrac{z}{\bar{z}} dz$ along the positively oriented simple closed contour $C$ which is the sum of four portions:

   - the upper half circle of $|z| = 2$,
   - the line segment $[-2, -1]$,
   - the upper half circle of $|z| = 1$,
   - the line segment [1,2].