1) Find a linear fractional transformation that takes $1 \rightarrow 0$, $i \rightarrow 1$ and $-i \rightarrow -1$

2) Let $A$ be the wedge $0 \leq \text{Arg} z \leq \pi/3$

Find the steady temperature distribution if the $x$-axis is maintained at $T=0$ and the upper edge at $T=10$

\[ T = 10 \]
\[ \angle \frac{\pi}{3} \]
\[ T = 0 \]

3) Let $A$ be the upper half of the unit disk. Assume $T = +100$ for $x > 0$, $T = -100$ for $x < 0$ and $T = -200 \frac{\text{Arg} z}{\pi} + 100$ on the top edge. Find the steady $T$ distribution.

4) Let $A$ be the disk of radius 2 ($1 \leq z \leq 2$) with $T = 1$ on its top edge and $T = -1$ on its bottom edge. Find the steady $T$ distribution.

\[ T = 1 \]
\[ \angle \frac{\pi}{2} \]
\[ T = -1 \]

Figure 3)