Instructions Please write your name in the upper right-hand corner of the page. Circle the correct answer. No explanation is required.

1. If $z_1$, $z_2$, and $z_3$ are three distinct complex numbers, then there is precisely one linear fractional transformation $T$ such that $T(z_1) = 1$, $T(z_2) = i$, and $T(z_3) = 0$. True False

2. If $f$ is an analytic function in a disc centered at $z_0$, and the derivative $f'(z_0) \neq 0$, then $f$ is conformal at $z_0$. True False

3. There exists a one-to-one conformal mapping from the open first quadrant onto the open unit disc. (The open first quadrant is the set $\{ z : \text{Re}(z) > 0 \text{ and } \text{Im}(z) > 0 \}$, and the open unit disc is $\{ z : |z| < 1 \}$. ) True False

4. The two curves in the $x$–$y$ plane defined by the equations $x^2 - y^2 = 1$ and $2xy = 3$ intersect orthogonally. True False

5. The linear fractional transformation $\frac{z + 2}{3z + 1}$ maps the imaginary axis (together with the point at $\infty$) onto a circle whose radius equals $5/6$. True False