

HOMEWORK 8, DUE ??

Consider the following problems:

- (1) Consider the Möbius transformation f that maps the points $z_1 = 1$, $z_2 = i$, and $z_3 = \infty$ onto the points $w_1 = 0$, $w_2 = -1$, and $w_3 = 2i$.
 - (a) Find the values of a , b , c , and d such that $f(z) = \frac{az + b}{cz + d}$.
 - (b) Does f map the real line to a line or a circle? Find the equation of the line, or the center and radius of the circle.

- (2) Consider the Möbius transformation f that maps the points $z_1 = i$, $z_2 = -i$, and $z_3 = 1 + i$ onto the points $w_1 = 2 + i$, $w_2 = i$, and $w_3 = \infty$.
 - (a) Find the values of a , b , c , and d such that $f(z) = \frac{az + b}{cz + d}$.
 - (b) Does f map the real line to a line or a circle? Find the equation of the line, or the center and radius of the circle.

- (3) Consider the Möbius transformation $f(z) = \frac{z - 2}{z}$. Let R be the closed disk $|z - 1| \leq 1$. What is the image, $f(R)$?