Assignment 1 - Complex numbers and functions
Due January 29th

1. Let $z = 2 - 2i$. Compute:
   a) $|z|$
   b) $\arg z$
   c) z^3
   d) all cubic roots of z
2. Let $f : \mathbb{C} \to \mathbb{C}$ be defined by $f(a + ib) = b + ia$.
   a) Find the real and imaginary parts of the function in polar coordinates
   b) Show that f is one-to-one and onto
   c) Find the inverse of f
   d) Find a formula for $\frac{f(z)}{z}$
3. Find two functions $f_1,\ f_2 : \mathbb{C} \to \mathbb{C}$ such that:
   a) f_1 is one-to-one but not onto
   b) f_2 is onto but not one-to-one

Evaluation: 0.5 pts for each subquestion, no partial credit