1. Verify that a bilinear function $w = f(z)$ becomes a linear function if the infinite point from the plane $z$ is sent to the infinite point from the plane $w$.

2. Determine where the following functions are continuous and clearly explain why:

$$ f_1(z) = \frac{1}{z} $$

$$ f_2(z) = \sin x \cosh y + i \cos x \sinh y $$

$$ f_3(z) = |z|^2 $$