

Complex numbers (for geometry proof)

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What would be a short and straightforward way to prove that

$$|z-z_1| / |z-z_2| = a$$

(in which z_1 and z_2 are complex and a is real and independent of z)
implies the existence of a complex number z_0 and a real number R (also independent of z) so that

$$|z-z_0| = R$$

maybe without having to calculate z_0 and R ?

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