18.701: Problem Set 10

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Problem 1

a) Let SL_2 be the special linear group of real matrices with determinant 1. Determine the possible eigenvalues λ (real or complex) of the elements of SL_2, and make a drawing showing the points λ in the complex plane.

Proof. □

b) For each λ, decompose the set of matrices $P \in \mathrm{SL}_2$ with eigenvalue λ into SL_2-conjugacy classes.

Proof. □

c) Determine the matrices $P \in \mathrm{SL}_2$ that can be obtained as $P = e^A$ for some real matrix A.

Proof. □

Problem 2

Proof. □