DIHEDRAL GROUP D_3

Definition. The dihedral group D_n ($n \geq 3$) is the group of symmetries of a regular n-sided polygon.

Exercise. In this exercise we shall study the group D_3.

(1) List all symmetries of an equilateral triangle, giving them "letter" names. For example, you can call counter-clockwise rotation by 120° by $\rho_{\frac{2\pi}{3}}$. Count the number of symmetries. Classify which symmetries are orientation-preserving, and which are orientation-reversing.

(2) What is the order of D_3?

(3) Compute the multiplication table for D_3.

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