Math 3500

Algebra I: Group Theory

Book 1

Symmetry group of a square ⬜ :

$G = \{I, R, R^2, R^3, H, V, D, D'\}$
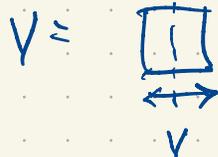
R = counter-clockwise rotation about center by $90°$

R^2 = $180°$ rotation about center

R^3 = $270°$ counter clockwise rotation = $90°$ clockwise rotation

$R^4 = I$

D = reflection

$D' =$

$H =$

$V =$

Symmetry group
of square $G = \{I, R, R^2, R^3, D, D', H, V\}$

Group elements are transformations/functions/maps/mappings/arrows
(not the images/squares on which the group elements act).
Virtual symmetries reverse orientation; (eg. reflections)
direct symmetries preserve orientation. (eg. rotations)