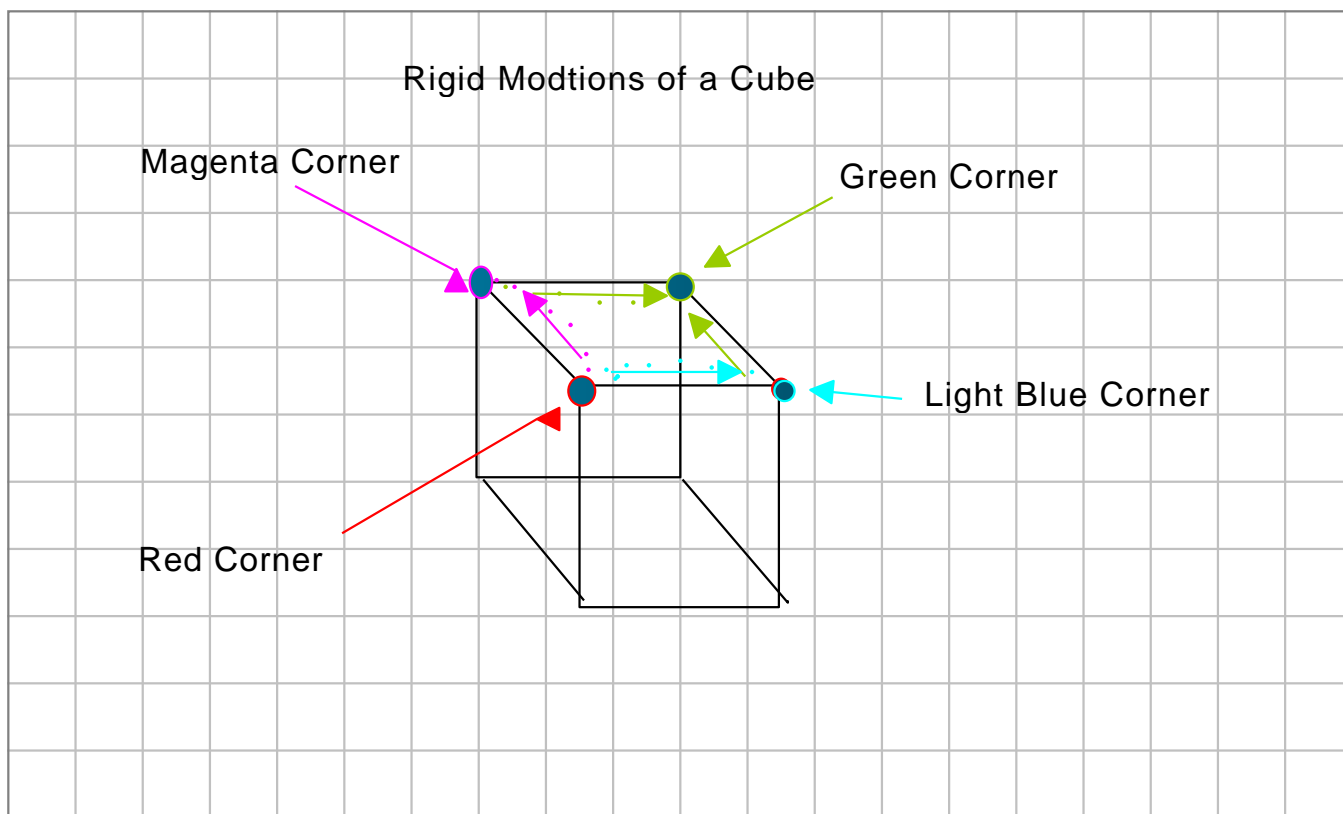


3D Rigid Motions Of A Cube

December 26, 2013

Joseph Pousada

Here is just a quick description of group of rigid motions of a cube in a three dimensional plane \mathbb{R}^3 . A cube has six sides and each side has four corners. The rotations are through each of the four corners of those sides and you would spin it around. If you held it at one corner and just rotated it you would have six elements rotating. You rotate to either of the other two corners to your left or right or on the other side. Using the diagram below, if we were holding the cube with the red corner and spinning it around we would have six rotations. We could then rotate 120 degrees to the magenta corner and have six rotations, or we could rotate 120 degrees to the light blue corner have six rotations. Alternatively we could rotate 240 degrees to the green side and have six rotations.



References:

Dummit, D. S., & Foote, R. M. (2004). Abstract algebra. Hoboken, NJ: Wiley.

Cubic Rotations : nrich.maths.org. (n.d.). Retrieved from <http://nrich.maths.org/2355>