

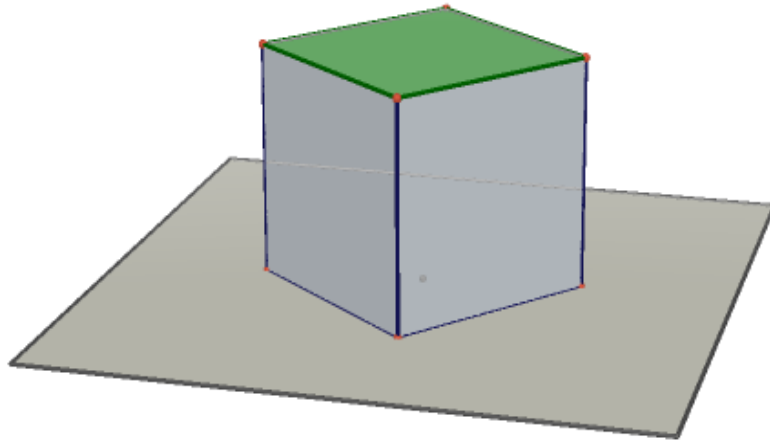
How to Turn a Cube into a Rhombic Dodecahedron?

Jen-chung Chuan

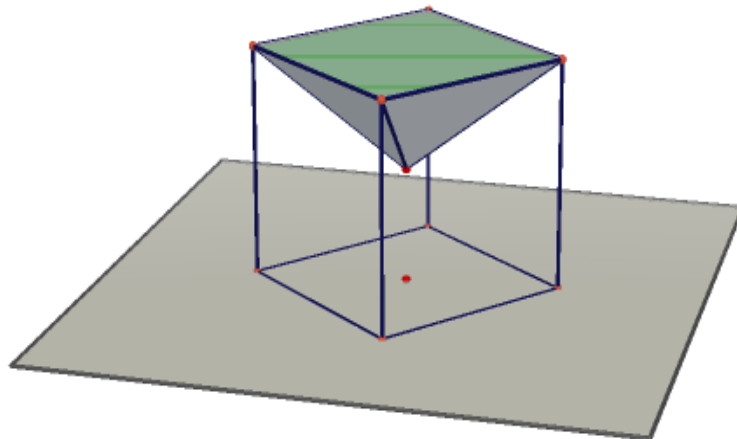
<http://sylvester.math.nthu.edu.tw/d2/atcm09/cube-rhombicD.html>

Abstract

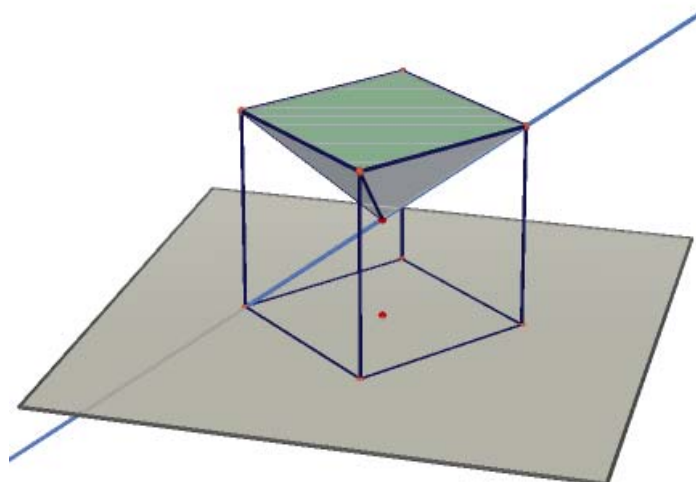
1) Start with a cube:



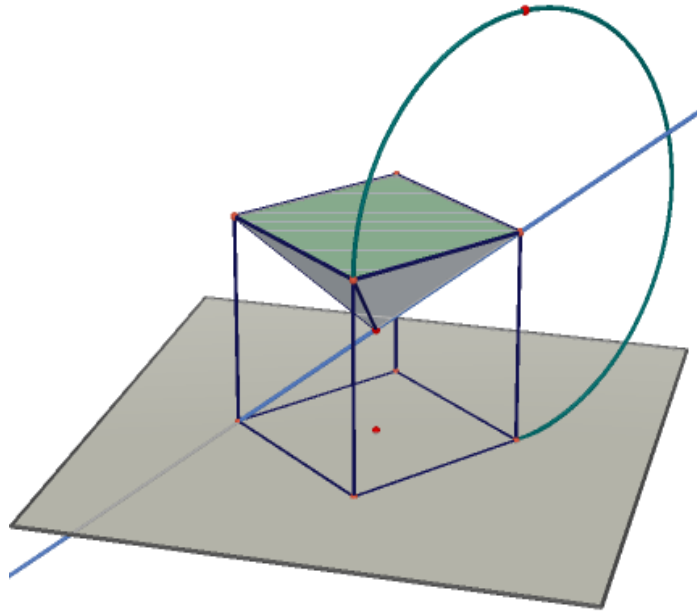
2) Construct an inverted pyramid by taking the center as the vertex and the square on top as the base:



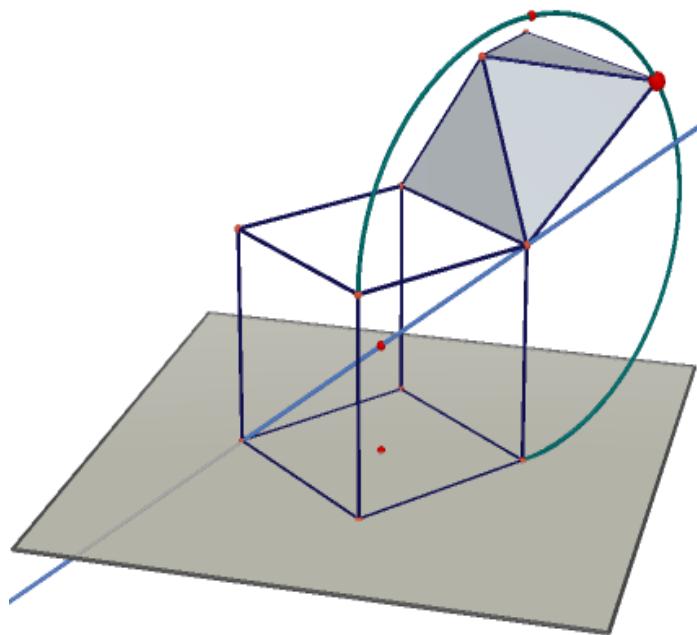
3) Construct a diagonal of the cube:



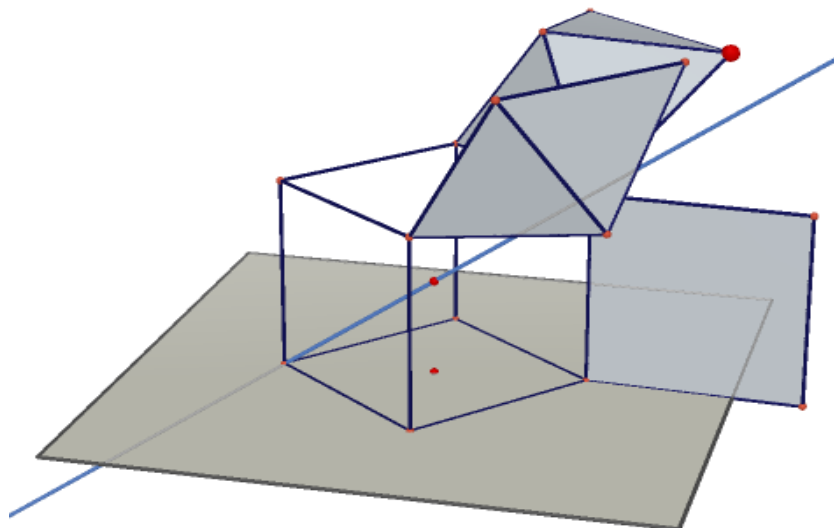
4) Construct a 270-degree arc:



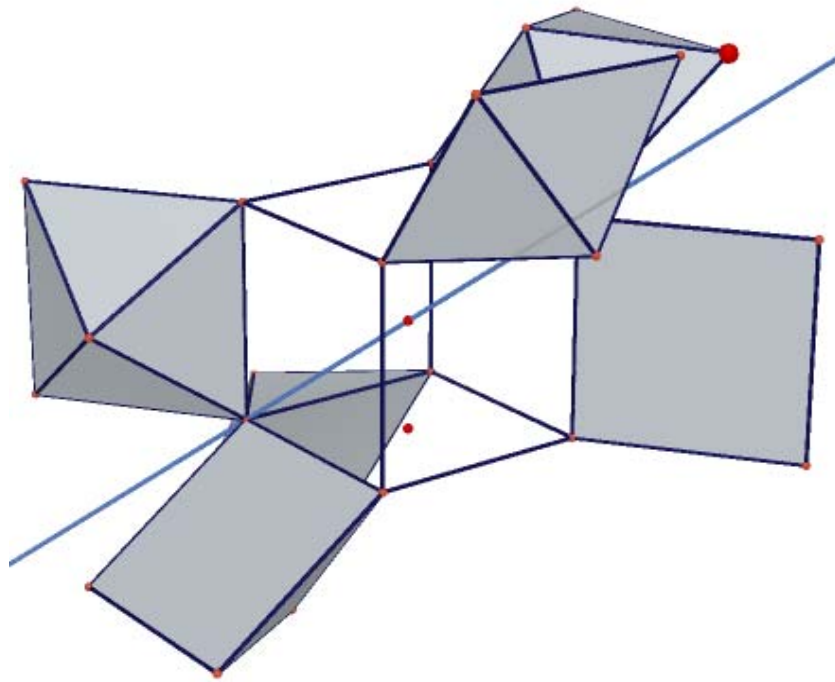
5) Rotate the pyramid along the axis of the arc:



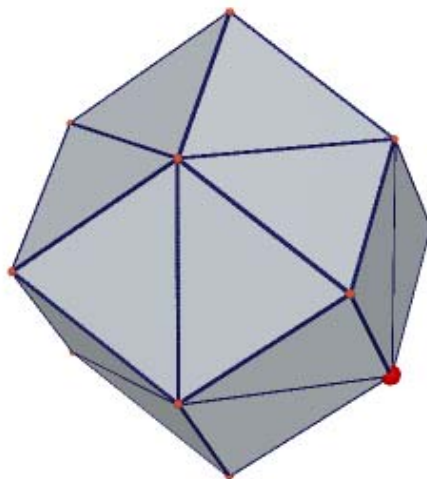
6) Rotate the pyramid in 5) with respect to the diagonal by 120 degrees in both directions:



7) Construct the pyramids point symmetric to those in 6):



8) The cube is now turned into a Rhombic Dodecahedron by grabbing the large vertex:



Software environment: Cabri 3D installed in Windows XP. Network connection will enhance the demo but is not required.