Graphing a Snowflake Using Symmetry



Snowflakes have a symmetrical shape that often follows a simple pattern that is replicated to form the full shape that you see.

Problem 1 - Graph the following points to make a design in the First Quadrant:

(10,0), (10,2), (6,2), (6,0), (4,2), (0,0), (4,3), (3,5), (5,4), (6,7), (3,9), (1,6), (3,5), (1,4), (0,0)

Problem 2 - Connect the points with line segments in the order given.

Problem 3 - Reflect the pattern that you drew into the Second Quadrant, then complete the pattern in Quadrants Three and Four to form the full snowflake shape!

Space Math



Problem 1 and 2 -

Problem 3 - Students may either place 'mirrors along the X and Y axis and redraw the shape in the First Quadrant, or use the following symmetry idea: To reflect the figure into Quadrant Two, plot the points in Quadrant One with the sign of the x coordinates replaced by their negative : (x,y) becomes (-x, y). For Quadrant Three use (x,y) becomes (-x, -y) and for Quadrant Four (x,y) becomes (x, -y). The full figure is shown below:



http://spacemath.gsfc.nasa.gov