The **Koch snowflake sequence** is defined in the following way: Start with an equilateral triangle having sides of length $l$. Produce a new polygon by replacing the middle third of each side with an equilateral triangle having sides of length $l/3$ and then remove the base of each new triangle. Repeat the process of replacing the middle third of each side with an equilateral triangle and removing the base. The plots below show the 0, 1, 2, and 5 elements in the snowflake sequence. The **Koch snowflake** is the limit of this sequence of polygons.

1. Find the sequence of the perimeters of the Koch snowflake sequence. Determine whether the sequence of perimeters converges or diverges. If it converges, find the limit.

2. Find the sequence of the areas of the Koch snowflake sequence. Determine whether the sequence of areas converges or diverges. If it converges, find the sum.

3. Write a sentence or two summarizing your results in geometric terms.

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