

# HW4

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## Fractal Theory

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A fractal is a geometric form in which some small pieces are similar to the whole. This feature is called self-similarity, in other words, self-similar geometries are called fractal structures. Fractal structures have been found not only in natural objects but also in mathematical analysis, ecological calculations, and kinetic models that appear in phase space. Rules that govern irregular and seemingly chaotic phenomena can also be found behind them. The science of complexity is the study of irregular natural complexities that have never been understood by science to find hidden order in them, and order can also be expressed in fractals in chaos theory representing the science of complexity.

Fractal is also studied in mathematical shapes. Fractal shapes are often made in repetitive patterns by recursive or repetitive tasks using computer software. Typical fractal shapes include the Mandelbro set, Cantor set, the Sierra Pinski triangle, the Peano curve, and the Koch curve. Fractals can be deterministic or autumnal, and may occur in conjunction with chaotic systems.

Fractal geometry is a branch of mathematics that studies the properties of fractals. This also applies to science, engineering, and computer art. Fractal structures are also frequently found in the natural world, including clouds, mountains, lightning, turbulence, coastline, and branches. Fractals are often used for practical purposes and can be used to represent very irregular objects in the real world. Fractal techniques are used not only in many areas of science but also technically in image compression.

## implementation

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