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pathological

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In mathematics, a *pathological object* is mathematical object that has a highly unexpected .

Pathological objects are typically percieved to, in some sense, be badly behaving. On the other hand, they are perfectly properly defined mathematical objects. Therefore this "bad behaviour" can simply be seen as a contradiction with our intuitive picture of how a certain object should behave.

Examples

- A very famous pathological function is the Weierstrass function, which is a continuous function that is nowhere differentiable.

- The Peano space filling curve. This pathological curve maps the unit interval $[0, 1]$ continuously onto $[0, 1] \times [0, 1]$.

- The Cantor set. This is subset of the interval $[0, 1]$ has the pathological property that it is uncountable yet its measure is zero.

- The Dirichlet's function from $\mathbb{R}$ to $\mathbb{R}$ is continuous at every irrational point and discontinuous at every rational point.

- Ackermann Function.

See also [**?**].

References

[1] Wikipedia http://en.wikipedia.org/wiki/Pathological (mathematics) entry on pathological, mathematics.