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SOME APPLICATIONS OF DENSITY THEOREM

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ABSTRACT

We know that, both rationals and irrationals are dense in \mathbb{R} . Therefore, \mathbb{R} has a dense subset, whose complement is also dense in \mathbb{R} . In this paper, I am trying to construct so many counter examples by using this idea, such that

- Construction of a function which is discontinuous everywhere.
- Construction of a function which is continuous exactly at one point (Or at finitely many points).
- Construction of a function which is differentiable at exactly one point (Or at finitely many points).

I am presenting all these constructions as an application of Density theorem.

KEYWORDS: Application of Density Theorem, Sequence of Rationals

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