

♣ Problem of the Week ♣

Prerequisites: Curiosity.

In the real number line a point p is called a **limit point** of the set M if and only if any open interval I containing p contains an element of M distinct from p .

Examples:

1. 2 is a limit point of the set $(2,3)$. This is because any open interval containing 2 must also intersect the set $(2,3)$.
2. 2.5 is also a limit point of the set $(2,3)$.
3. The set of natural numbers has no limit points.

Can you give an example of a set M that has the following properties:

1. M contains no interval.
2. Every point $p \in \mathbb{R}$ is a limit point of M .



"It is through science that we prove,
but through intuition that we discover."

-Henri Poincaré

Rules: This contest is open to Cumberland University students only. Solutions must be submitted by the deadline indicated. The first student to submit a correct answer **with supporting work** wins the prize (\$5.00). Any outside sources must be cited. **All work must be shown.** Work will initially be judged by Dr. Gammon. Disputes will be sent to another mathematician for a second opinion. Submit your solutions either typed in e-mail to kgammon@cumberland.edu or written legibly to Dr. Gammon, Memorial Hall room 310 A.