

Homeomorphisms and Roman alphabet

Source: <http://sci.tech-archive.net/Archive/sci.math/2007-08/msg03281.html>

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 - *Date:* Mon, 20 Aug 2007 23:43:06 +0200
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Exercise:

"Which capital letters of the Roman alphabet are homeomorphic? Are any isometric?"

The only isometric ones I have found are N and Z. M and W could also be, if perfectly specular.

The real problem comes when I have to decide whether two letters are homeomorphic. I exploit the fact that the continuous image of a connected is connected. For instance, let's assume $f: 'A' \rightarrow 'B'$ is a homeomorphism. Any restriction of f is still a homeomorphism, but I can disconnect A by removing a point, while I need to remove at least two points from B to disconnect it. Then f cannot exist.

That was easy. But are A and P homeomorphic? No, wait, maybe I can say something like this: I can remove two points x, y from 'A' such that x and y have two non intersecting open neighborhoods and, by (bi)continuity, $f(x)$ and $f(y)$ should be apart, but there are no such points in 'P' whose removal would keep 'P' connected.

Then, I can bend a letter into another but without altering the "proximity" of its points. For instance I can't open an 'O' because I would alter the "proximity" of two points, and, dually, I can't link two point that were far apart.

Can anyone confirm these lucubrations?

Thank you in advance,
Kiuahnm

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