

## [Fwd: Re: two questions on the Mandelbrot set]

**Source:** <http://sci.tech-archive.net/Archive/sci.fractals/2004-11/0007.html>

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**From:** Roger Bagula (*tftn\_at\_earthlink.net*)

**Date:** 11/01/04

Date: Mon, 01 Nov 2004 16:56:34 GMT

----- Original Message -----

Subject: Re: two questions on the Mandelbrot set

Date: Mon, 01 Nov 2004 07:30:03 -0500

From: A N Niel <anniel@nym.alias.net.invalid>

Reply-To: A N Niel <anniel@nym.alias.net.invalid>

Organization: RPG

Newsgroups: sci.math

References: <Oshhd.4605\$t45.712860@weber.videotron.net>

In article , David Bernier

wrote:

> *Suppose we let  $M$  denote the Mandelbrot set.*

> > *(1) How many connected components does the interior of  $M$  have?*

infinitely many

> > *(2) If  $bd(M)$  is the boundary of  $M$ , and  $S^1 = \{(x,y) \mid x^2 + y^2 = 1\}$ ,*

> *does there exist a continuous  $f: S^1 \rightarrow C$  (the complex plane),*

> *such that  $f(S^1) = bd(M)$  ?*

The continuous images of  $S^1$  are exactly the compact, arcwise-connected sets. So your answer is "yes". More interesting would be an analytic map from the exterior of  $M$  to  $\{z \in C \mid |z| > 1\}$  that extends continuously to the boundaries. The existence of this would require  $bd(M)$  locally connected, which has not yet been proved.

> > *David Bernier*

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Respectfully, Roger L. Bagula

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