

WIMM Watch: *Warehouse 13's* Mathematical Artifact  
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*Warehouse 13's* main characters Myka and Pete turn a corner on the Syfy channel's December 6 episode called "The Greatest Gift." The warehouse aisle that is lined with supernatural artifacts stretches out straight in front of them. They turn around and run back the other way but they do not make any progress because the aisle dilates further and further away from them in both directions. They stop to consider their options.

Myka: We're kind of trapped in an infinity band here, right... [making a figure eight shape with her hands]

Pete is confused and Myka further explains and formulates a plan:

Myka: ...a lemniscate, it's a term in algebraic geometry. It's a figure eight shaped curve that never meets itself on that... You know what, I'll explain it later. Listen, if we both move, well if we run as fast as we can in opposite directions, we might be able to kind of snap ourselves out of it.

It is nice to see a female television character mentioning "algebraic geometry" and Myka's escape plan succeeds. However, the visual scene seemed better indicated by a varying metric on a straight line, rather than a lemniscate—there's nothing visually to suggest the "figure 8" shape.

On the other hand, a lemniscate can be written in parametric equations, in such a way that the metric does expand as you go and the curve never does quite meet itself, as Myka claims! The parametric equations

$$x = \frac{t + t^3}{1 + t^4}, \quad y = \frac{t - t^3}{1 + t^4}$$

give an  $\infty$  shaped curve called the Lemniscate of Bernoulli, where one branch at the middle is at  $t=0$ , but the other branch is approached on both sides as  $t \rightarrow \pm\infty$ .

