Heyawake Walkthrough

geq0
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Inspired by <u>Yuki❄</u>'s puzzle commentaries, I wanted to write as well about a puzzle I made, just for funsies. Even though probably nobody's gonna read it, a lil' walkthrough never hurts anybody, right? Right. I chose **this Heyawake** I made last October, which I named "The Unholy Grail" — for reasons that'll be clear in a moment. It looked — to be completely frank — kind of horrendous, but the idea(s) that underlied it was likely one of the most ones I've ever had.
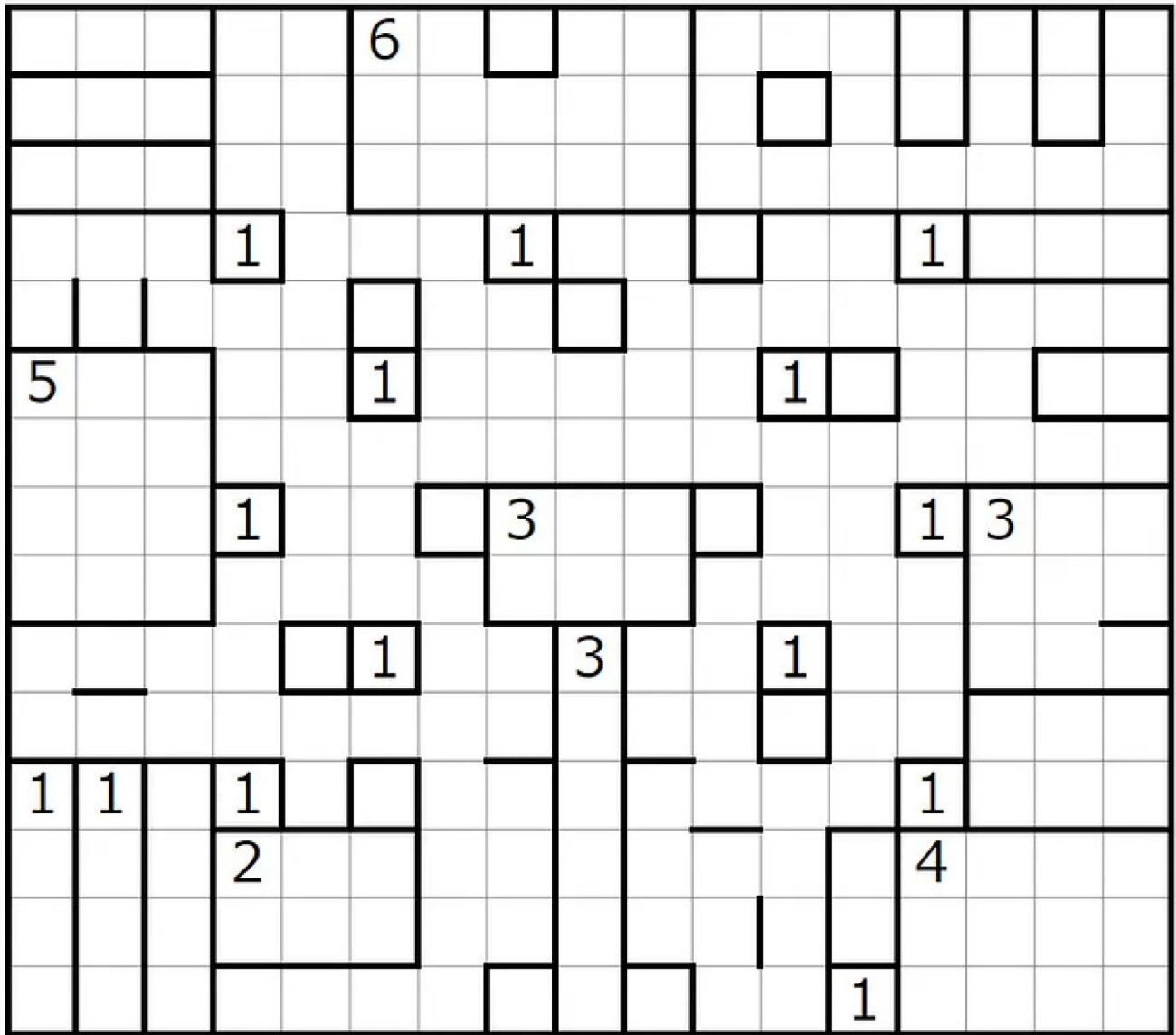
Click the link above to play this Heyawake on Puzzle Square JP. Only if you want, of course.

I will walk through solving this puzzle, but also provide comments on the thought process behind its design. Without further ado, let's do it.
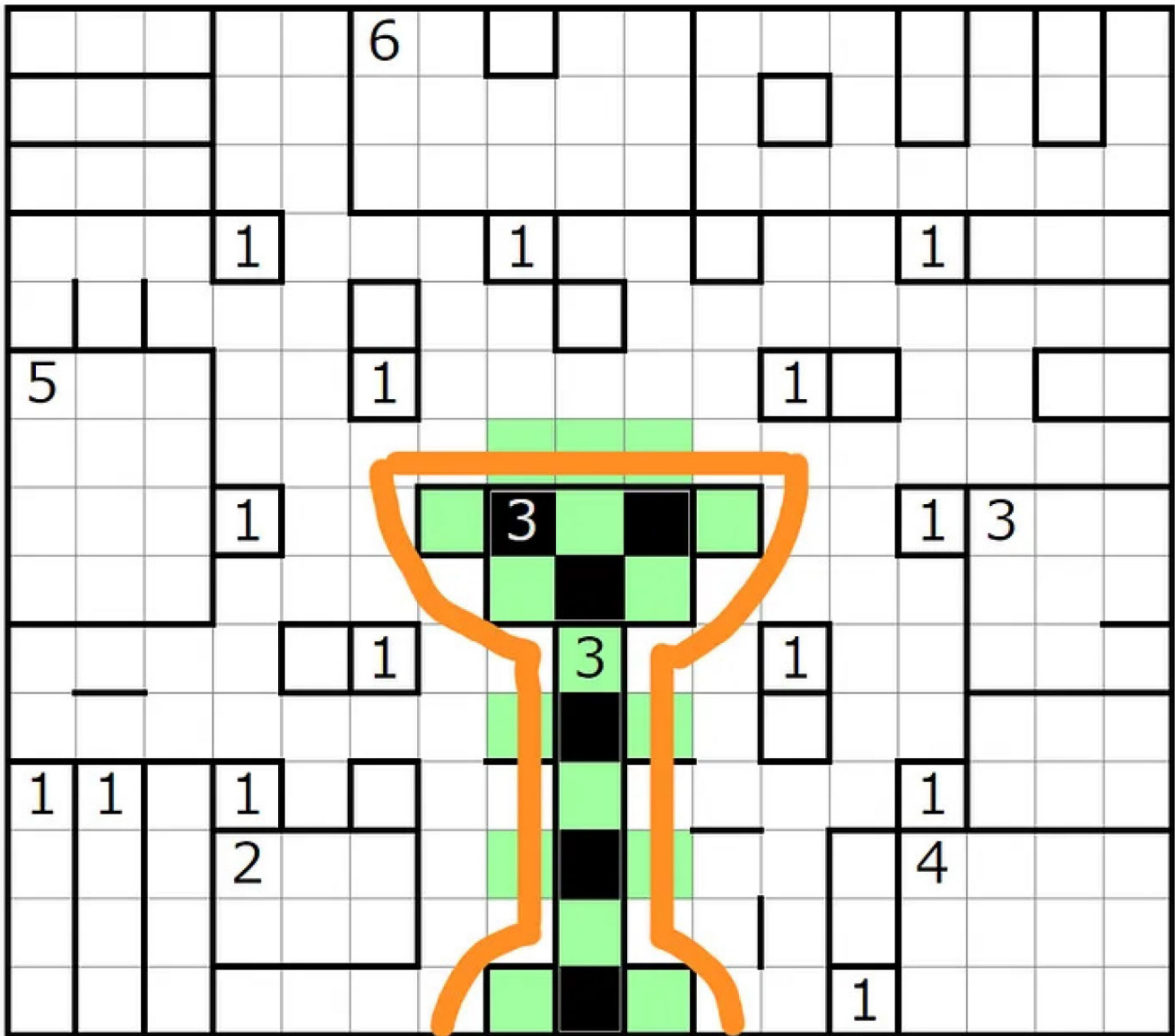
Before dealing with the bunch of 1's, let's start right in the middle with the 3-rectangle. It's clear that the blacks in here must face upward, which determines the 3-pole as well. And there we have it, that's the grail. Note that the blacks in the 3-rectangle are *grounded* — that is, they will connect via a string of blacks to the bottom of the board, which means they can never ground again via a different string to a different side of the board. This observation is crucial.
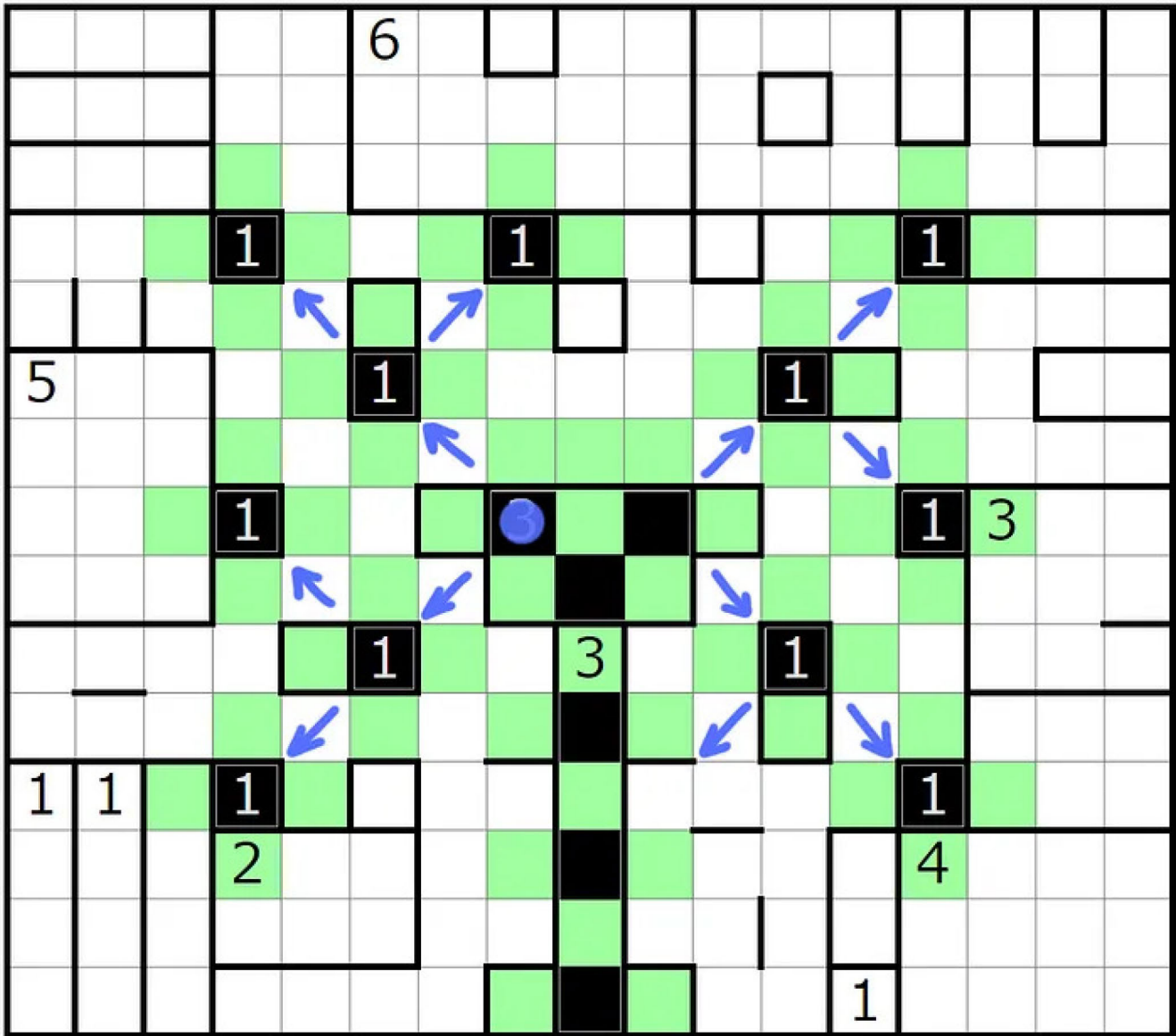
Now let's fill in the 1's. The board immediately gets very messy — but bear with me here. The main thing to notice is that the grail propagates towards both sides. Take the black cell with the blue dot as an example. It must fulfill one of the arrows on the left due to Heyawake's border rule, which connects it to a 1. Both 1's, in turn, must propagate themselves as well to another 1. This effectively creates 8 endpoints on the board:
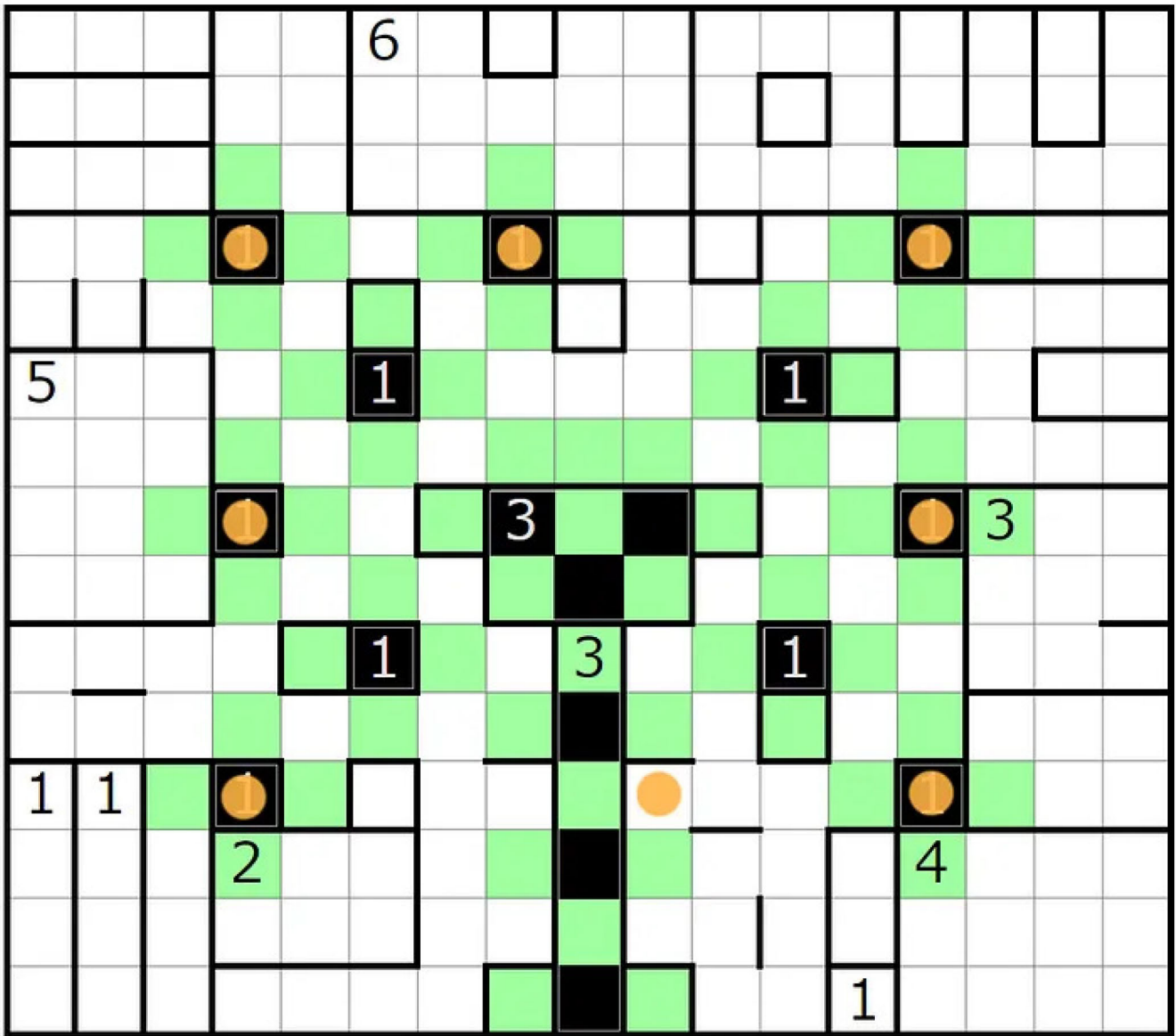
If any of these 8 endpoints are grounded, the grail must not take a path to them, otherwise the path would split the board in half. The key, then, is to solve each of these endpoints individually and check if it grounds.

But here comes the best part: it is impossible to individually solve *any* of these 8 endpoints. You can figure out if they ground or not by deduction, but the solutions to them are all non-unique. I took great care to ensure this was the case. Sacrifices had to be made — these little lines and irregular rooms strewn across the board were the consequence (I apologize for the bad

presentation. Sincerely). To be able to progress from here, it takes logical reasoning.
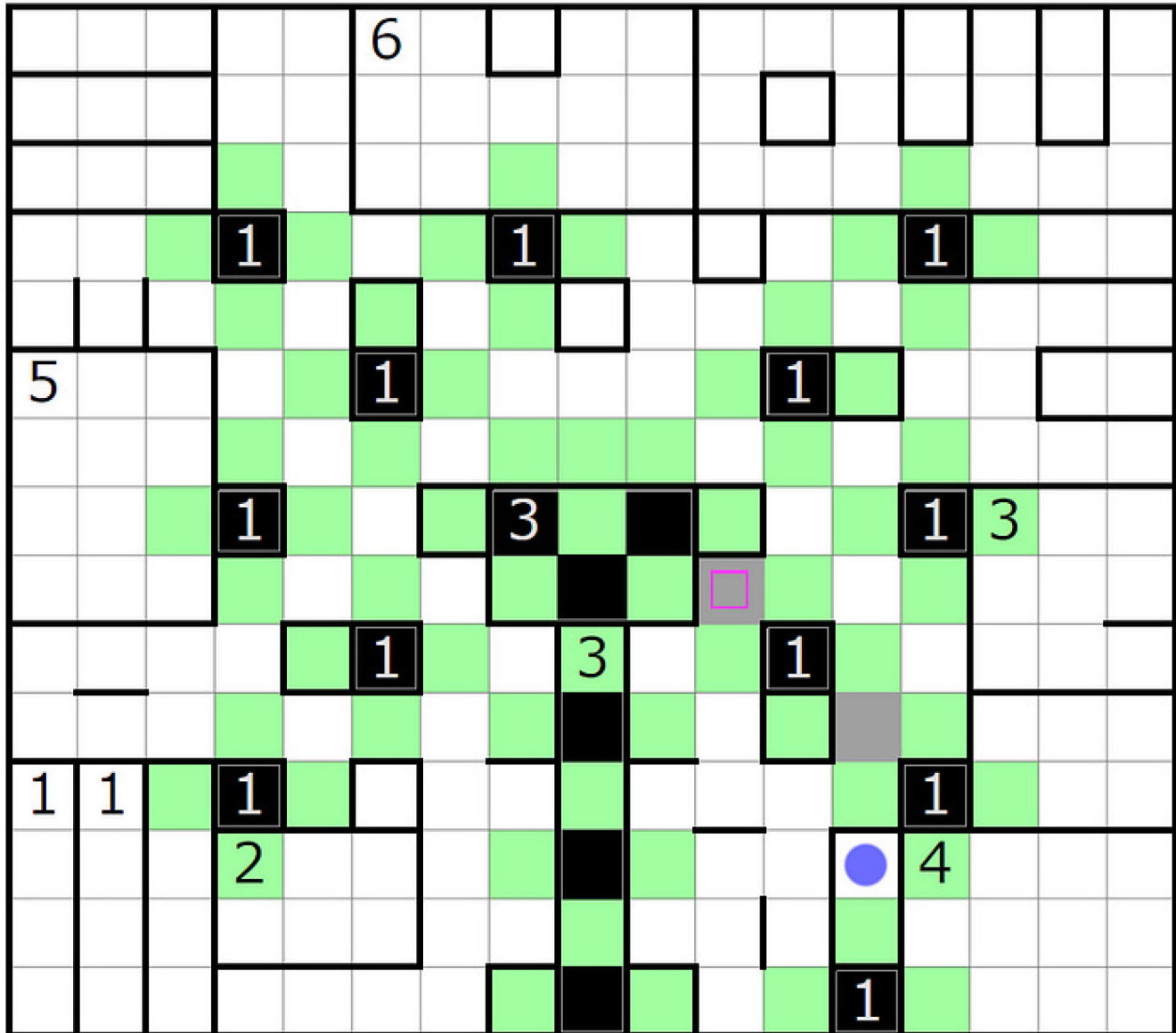
Case 1
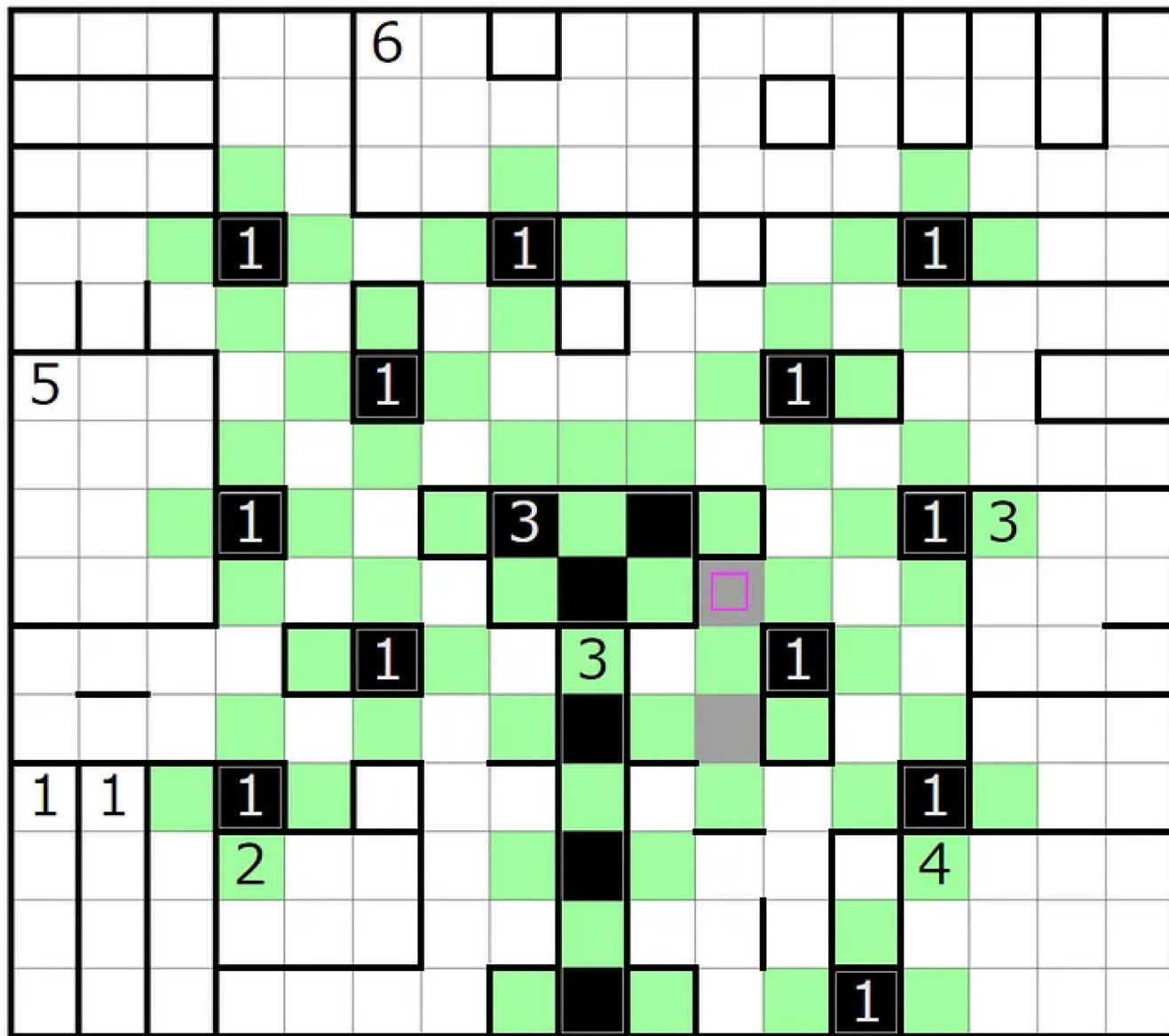
Case-by-case analysis time. Let's start with the simplest case — taking the bottom->left route on the right hand side, and then continue counter-clockwise. If we attempt to take this route, it is instantly clear that a closed loop will be formed.

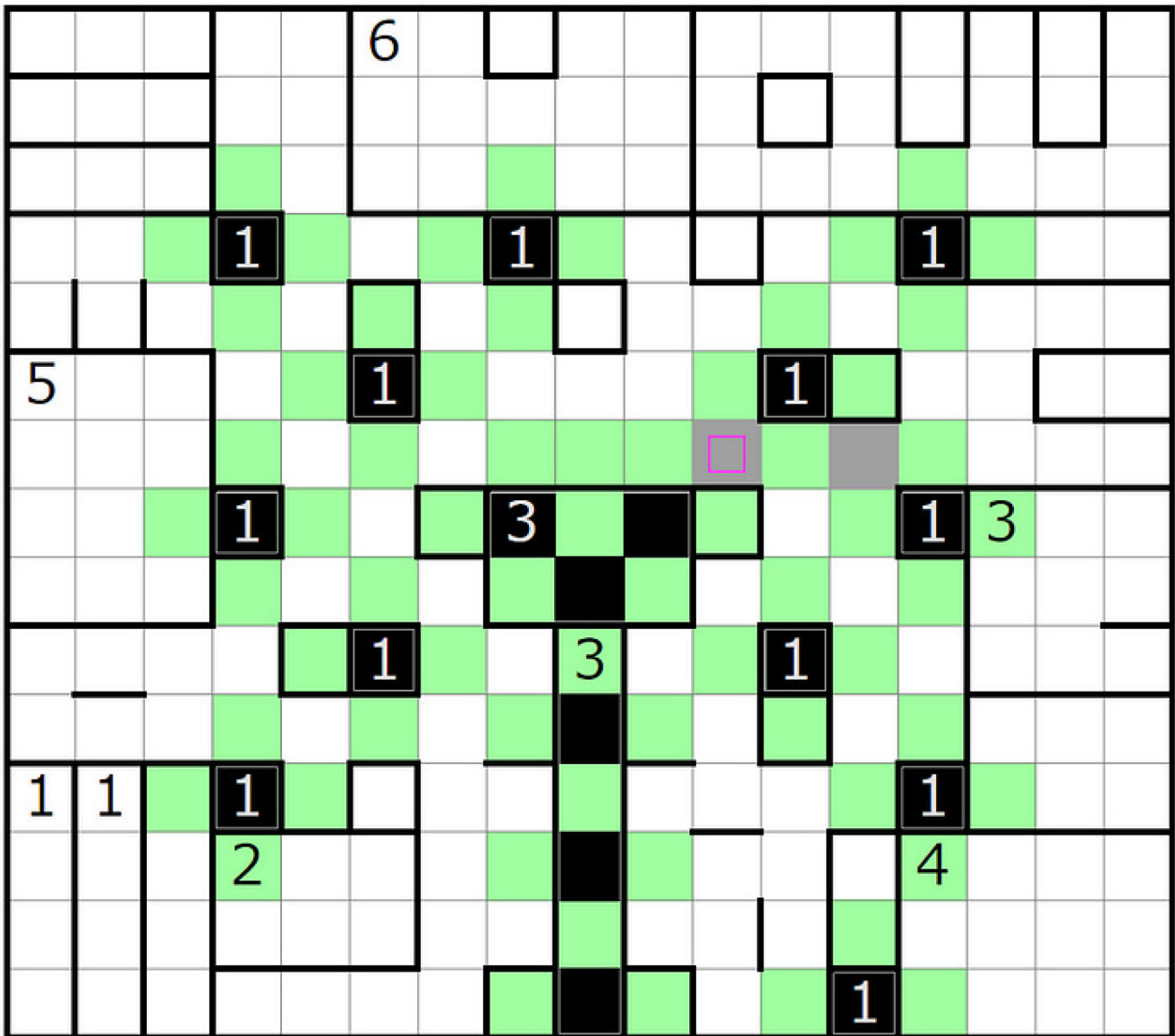This path is incorrect.

Case 2

If we take this route, consider the cell with the blue dot. If it is black, then the path grounds. If it is green, it will also cause grounding due to the 4 room in the corner (try it yourself).
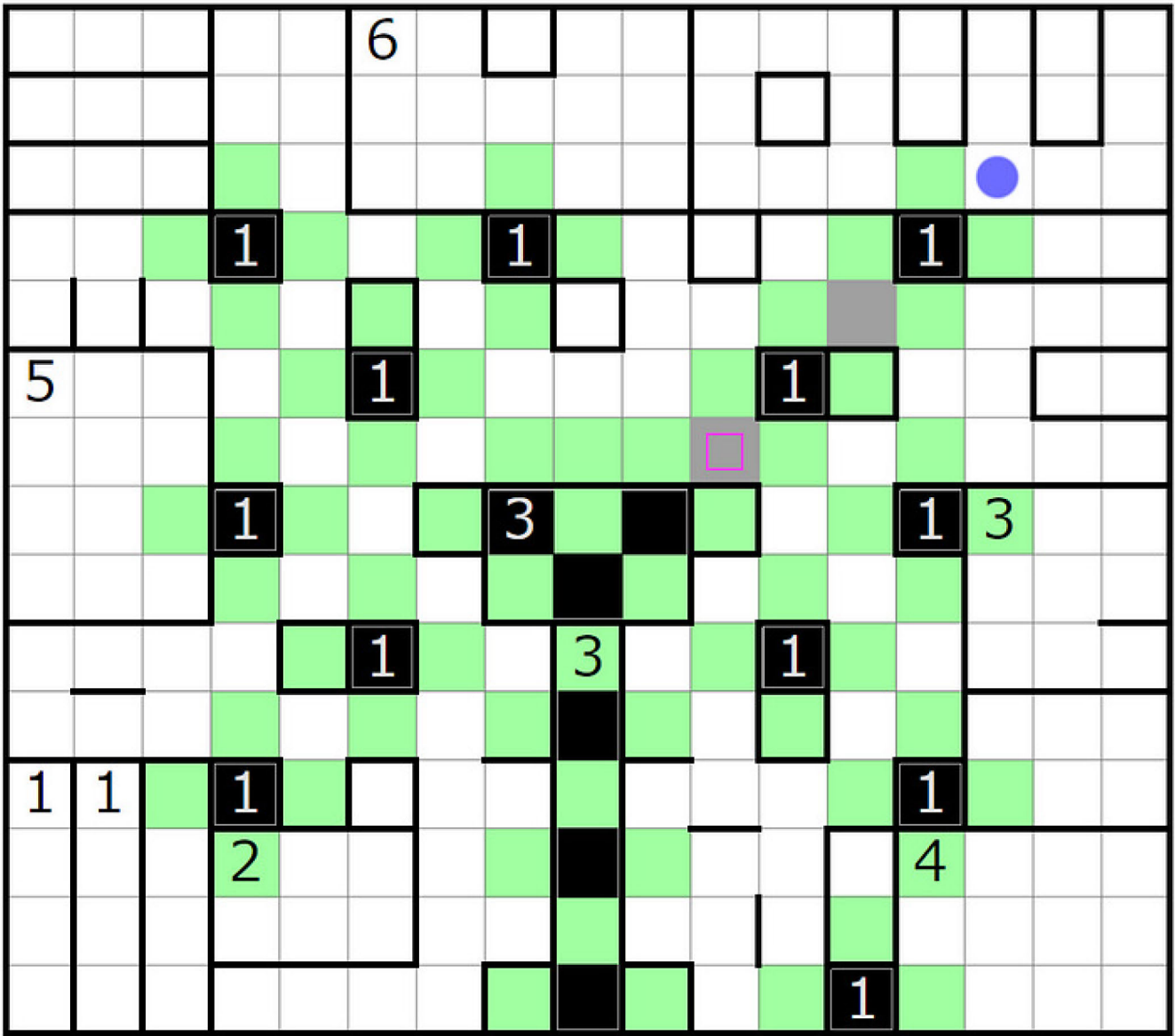
This path is incorrect.

Case 3

If we take this route, the path needn't be grounded.
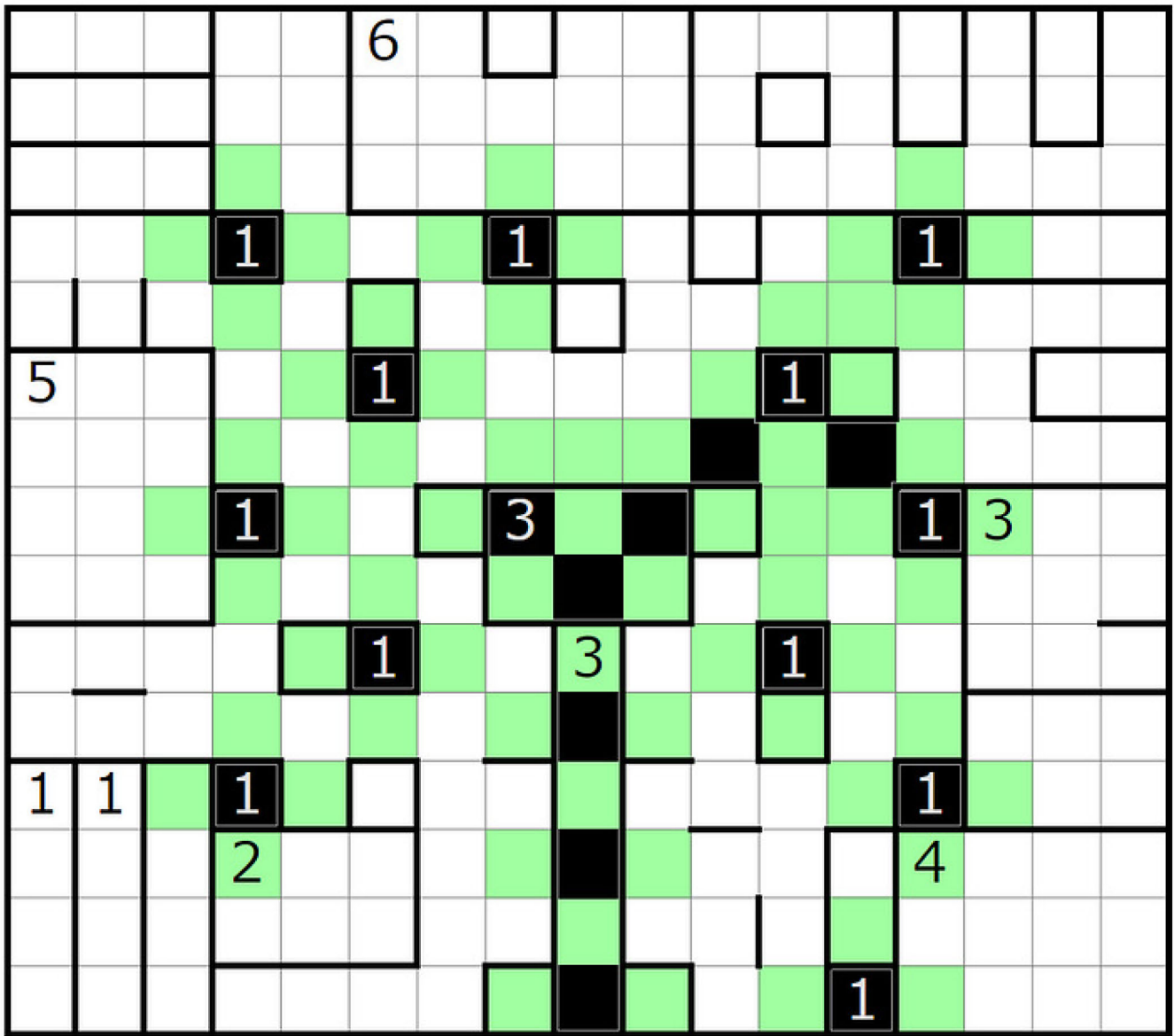
This path is possible.

Case 4

If we take this route, consider the cell with the blue dot. If it is green, it causes grounding. Thus it must be black. Then consider the cell immediately top right to it. No matter that cell is black or green, the path will ground.

This path is incorrect.

Since we must take a path on the right of the grail, and case 3 is the only valid case, we are able to confirm the following:

At this point, it's actually possible to solve the right half of the puzzle in its entirety.
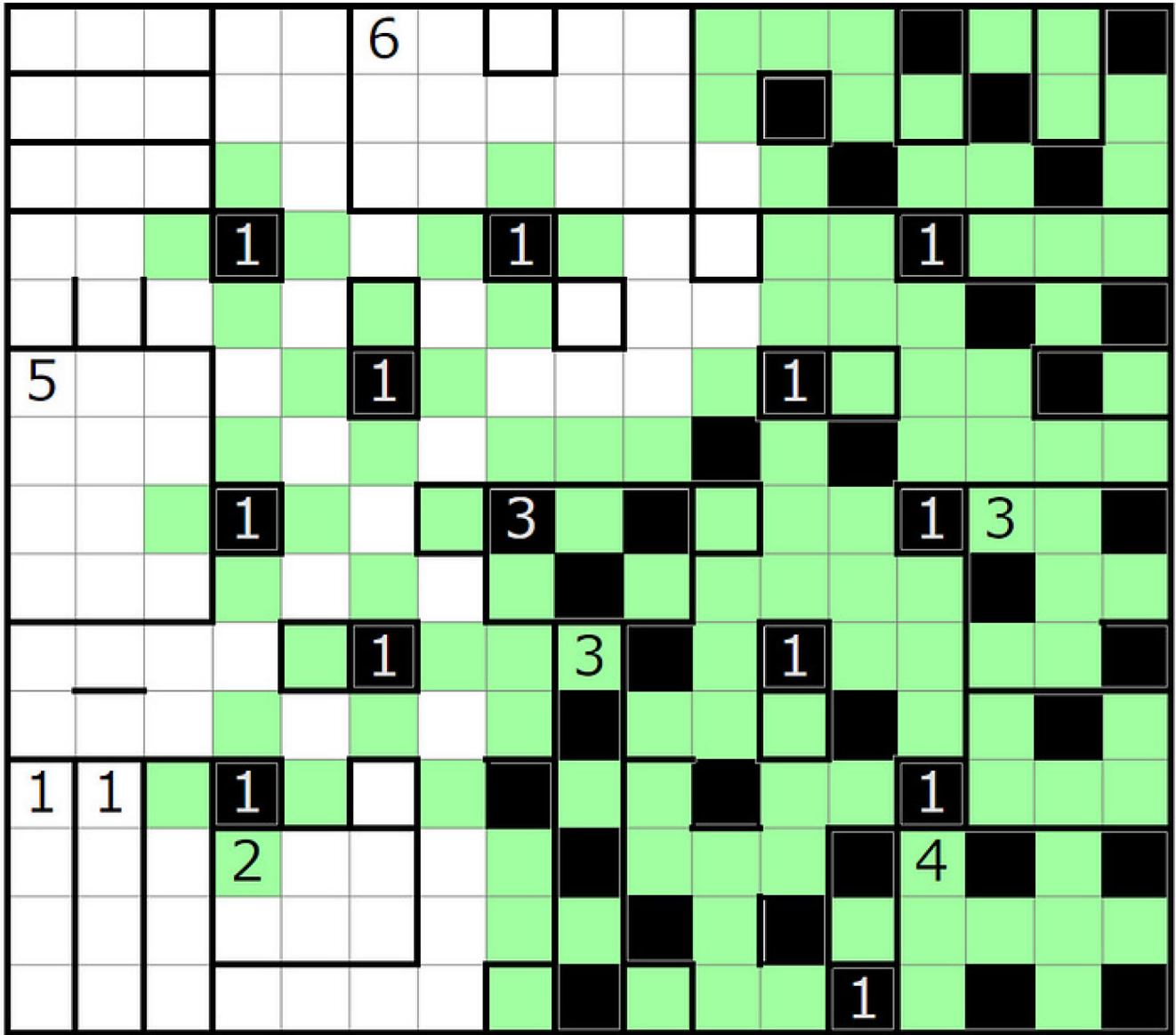
The process involves repeated applications of the connectivity rule and whatnot, and it isn't as interesting. I'll erase all progress on the right, since it's actually possible to solve the left half of the puzzle independently of the right half. There are four more cases on the left.
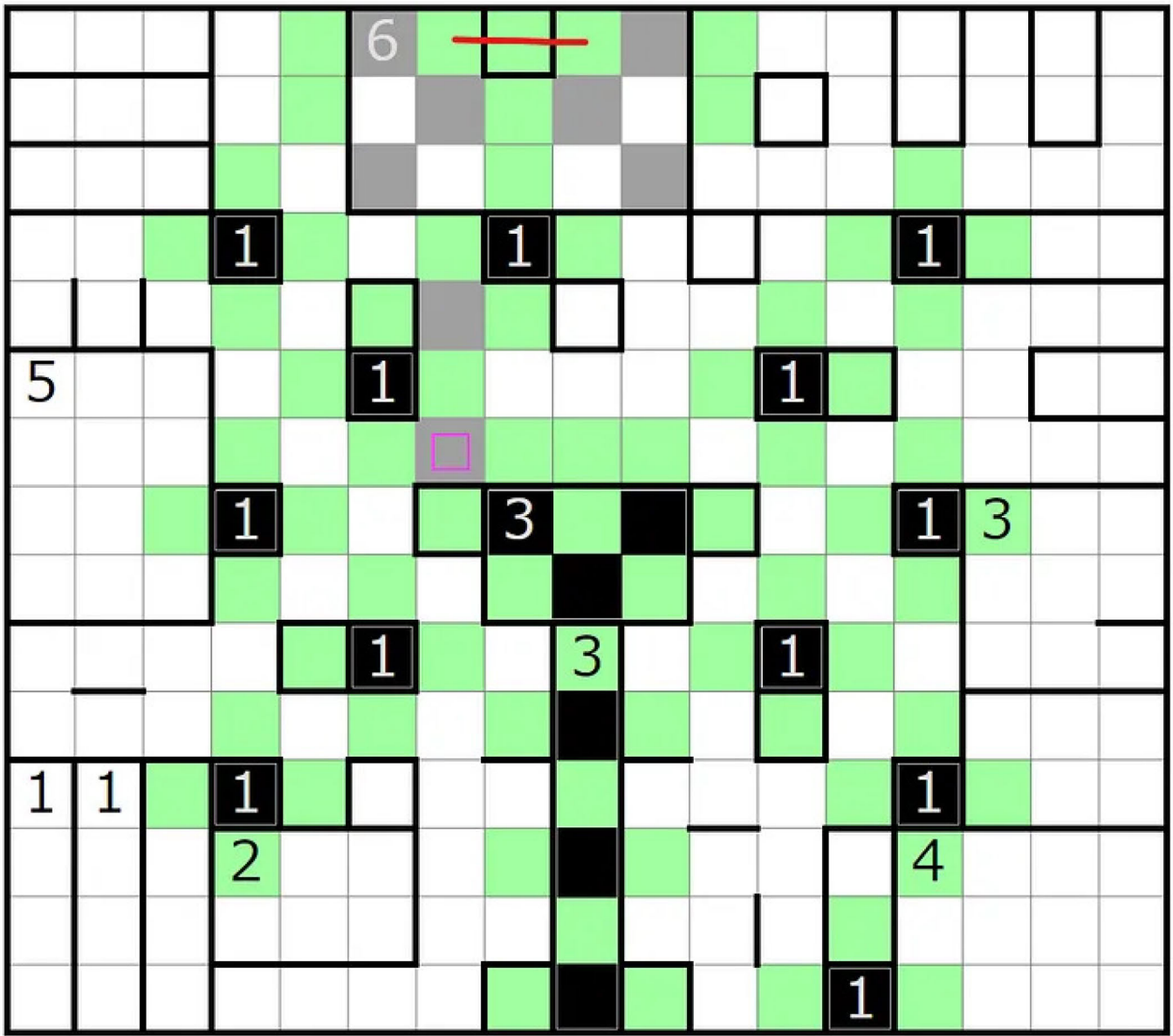
Case 5
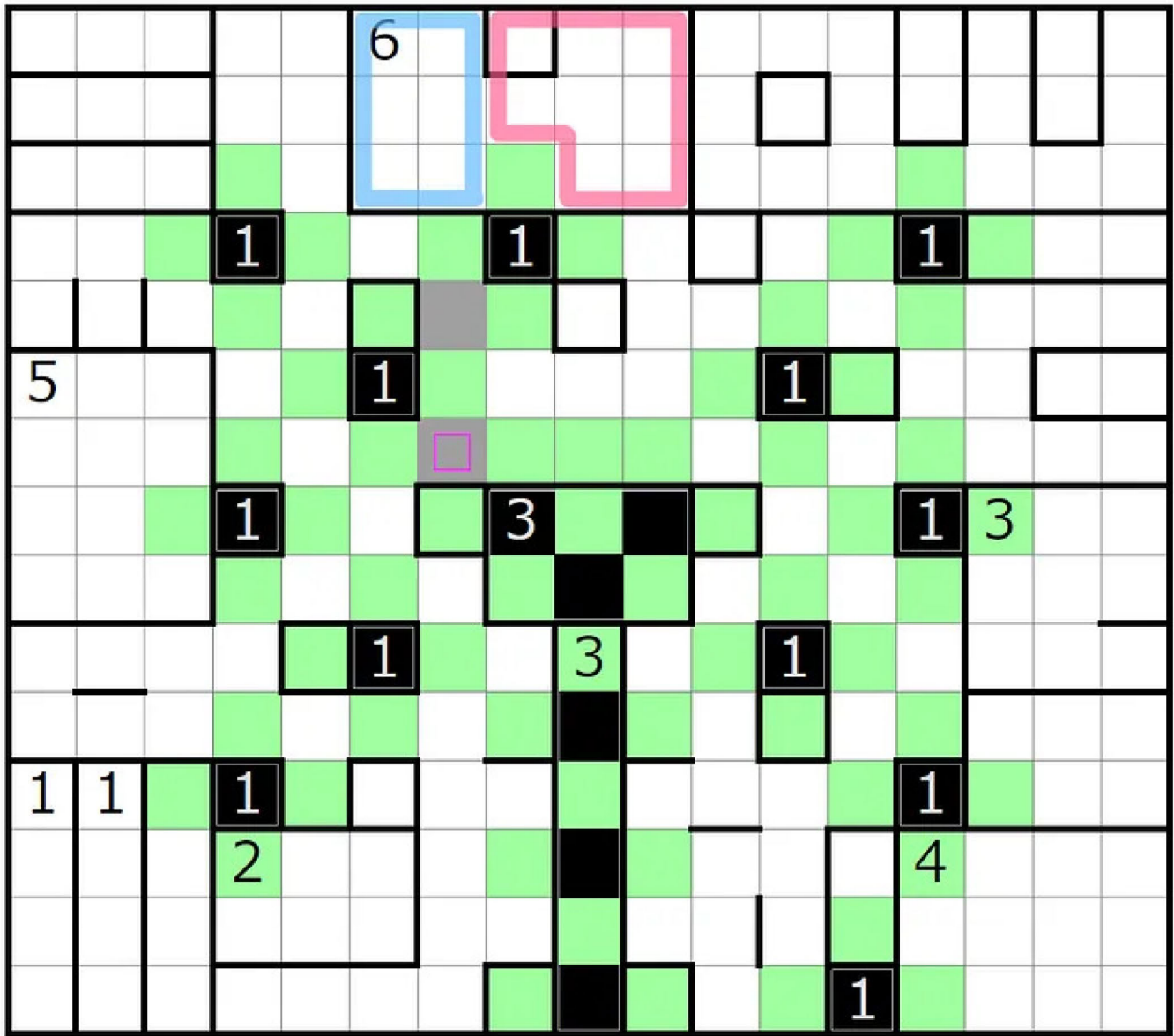
If we take this route, inspect the weird-looking 6 room at the top. The red portion cannot fit 4 blacks, so the blue portion must fit 3 blacks. By symmetry, we can see the 6 room is actually made up of two 3's side by side.
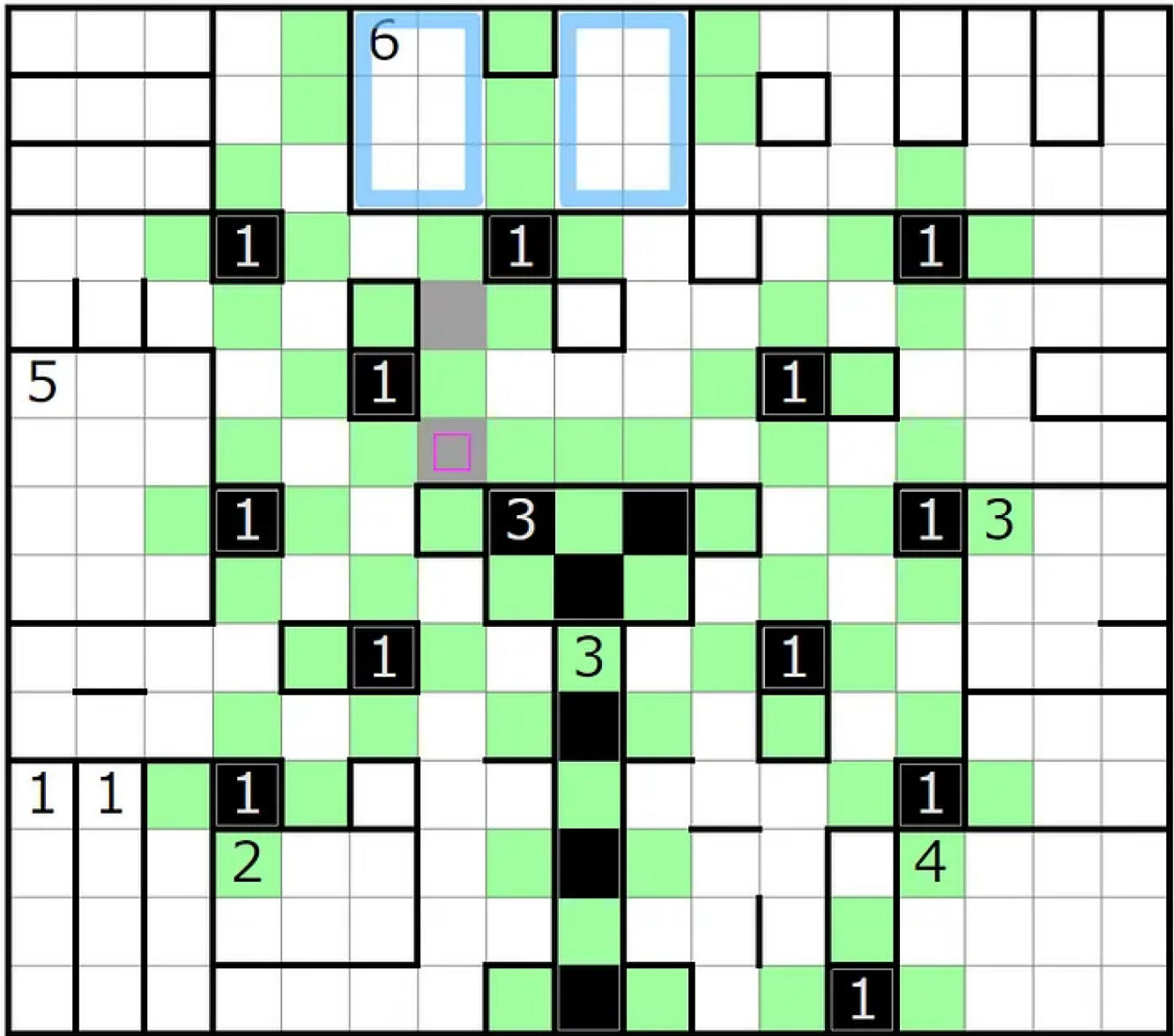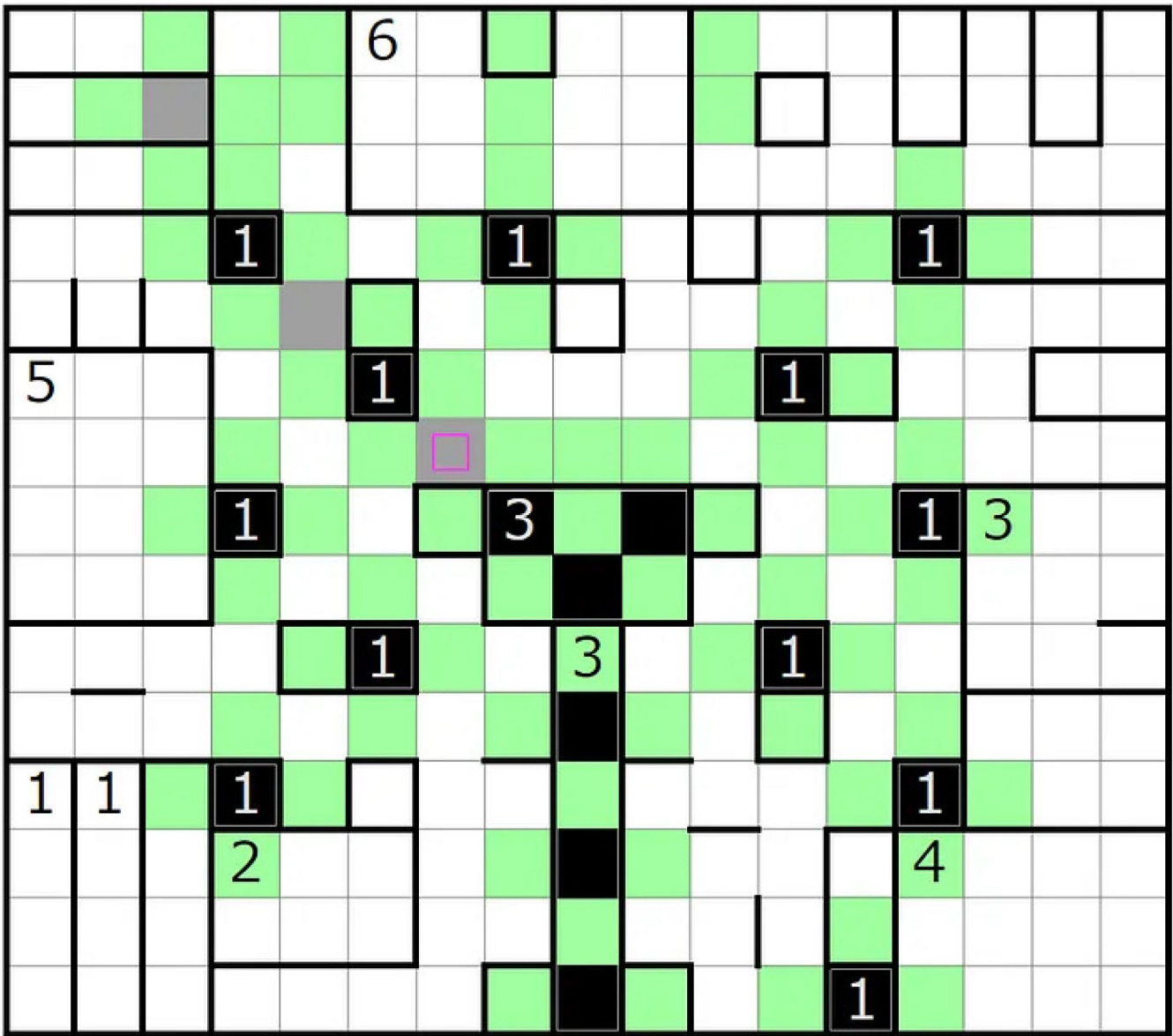
The key question: does the path ground? The only way to avoid grounding is to have the 3's face away from each other, but that violates the border rule!
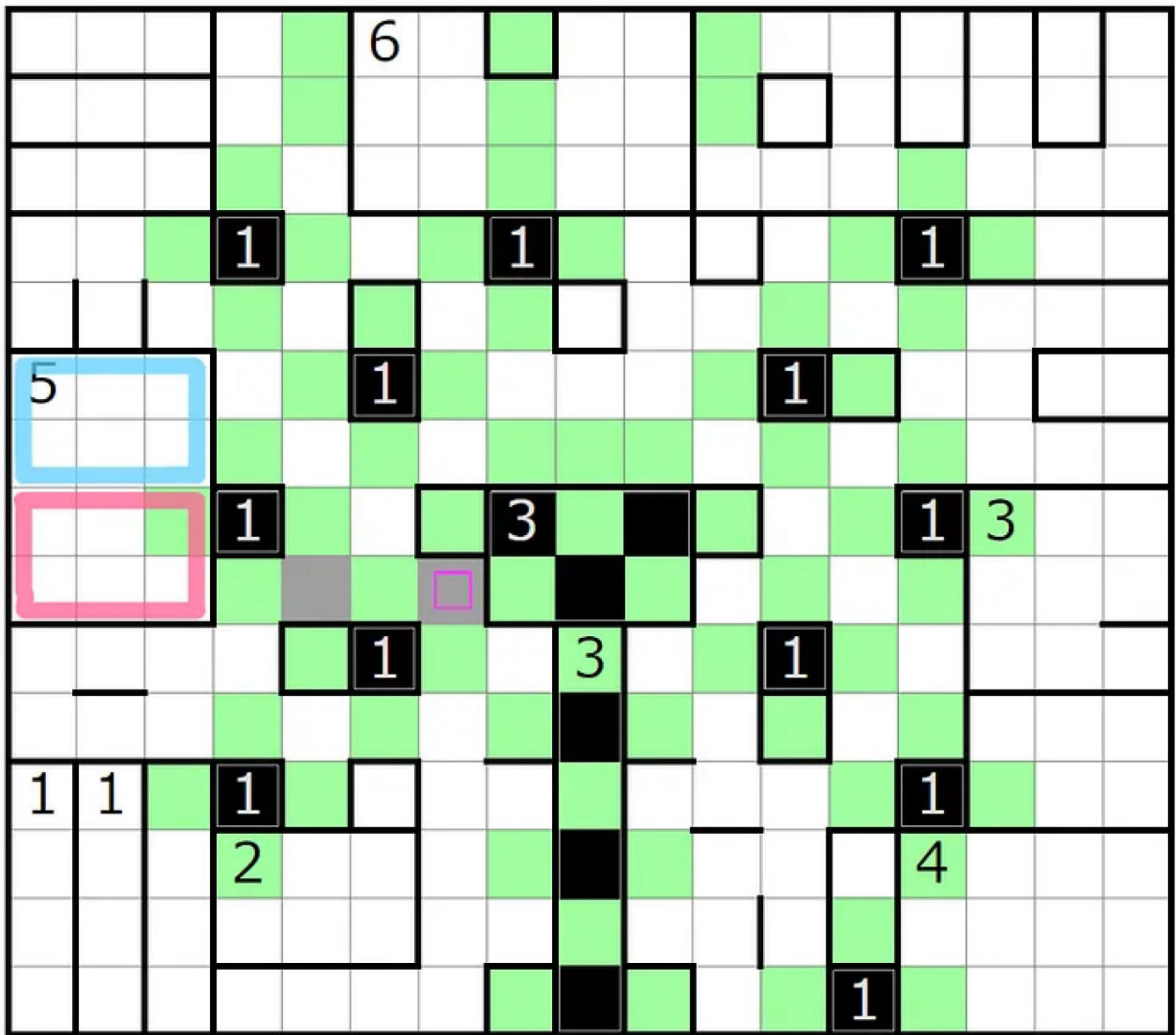
This path is incorrect.

Case 6

If we take this path, it doesn't have to ground.
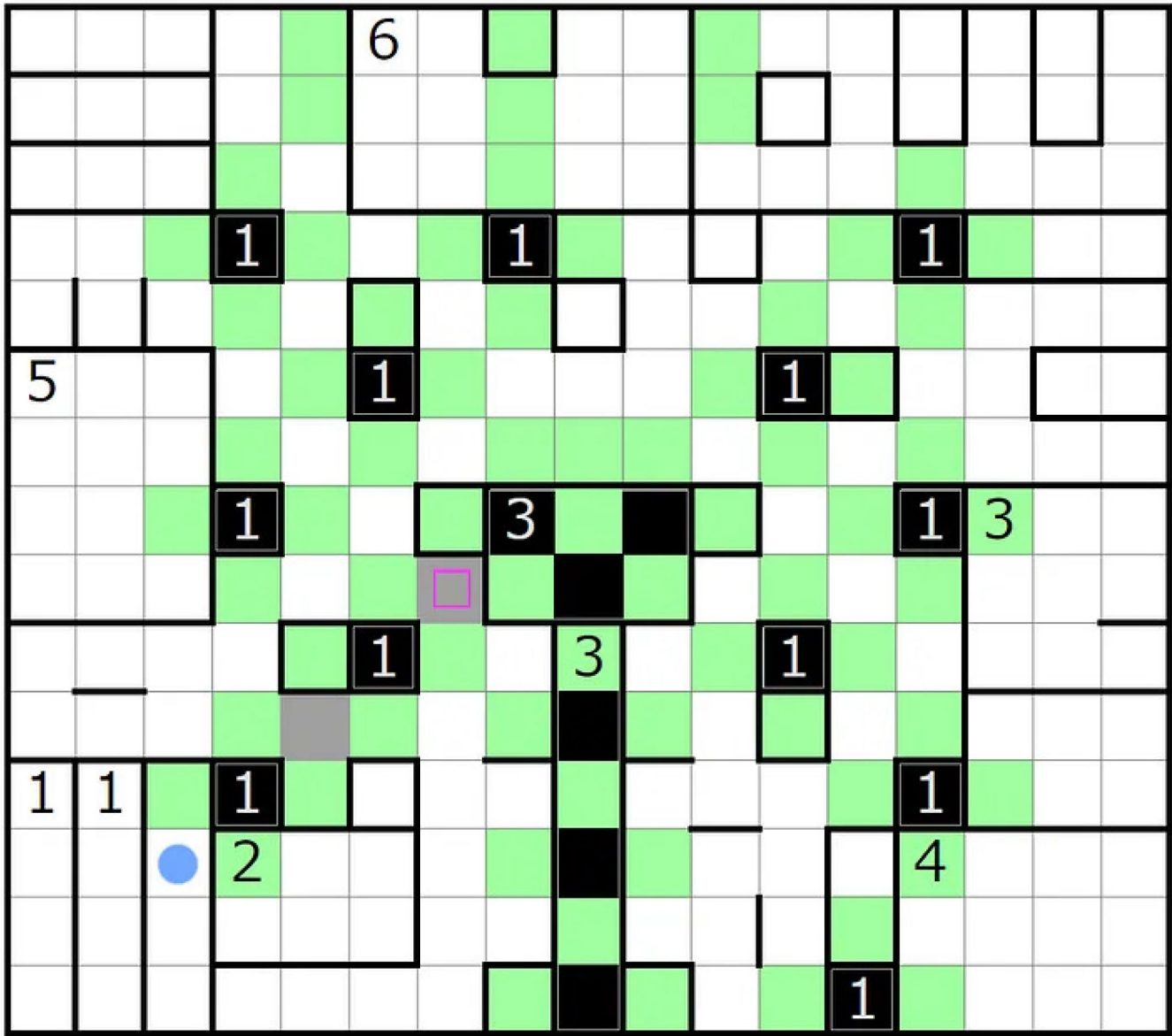
This path is possible.

Case 7

If we take this route, consider where we put the 3 blacks out of the 5. If put into the red portion, it grounds automatically. If put into the blue portion, it again must ground due to the funky lines jutting out of the 5 room.
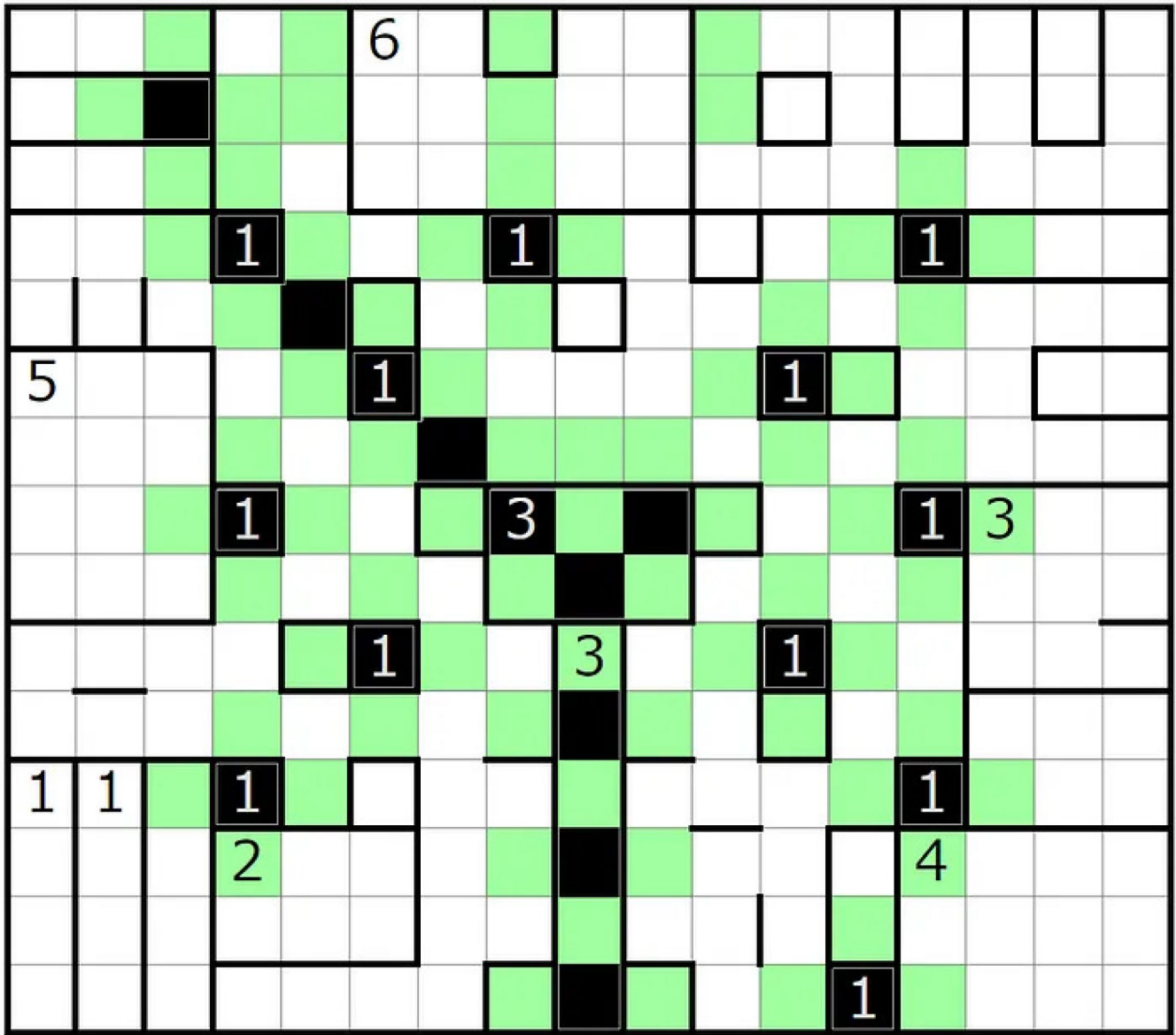
This path is incorrect.

Case 8

Final case. If we take this route, it's our good ol' River theory! Well, a bit too tiny of a river, but one nevertheless. If the blue dot is black, it grounds, by the theory. If it's green, then the river is dead. Yeah.
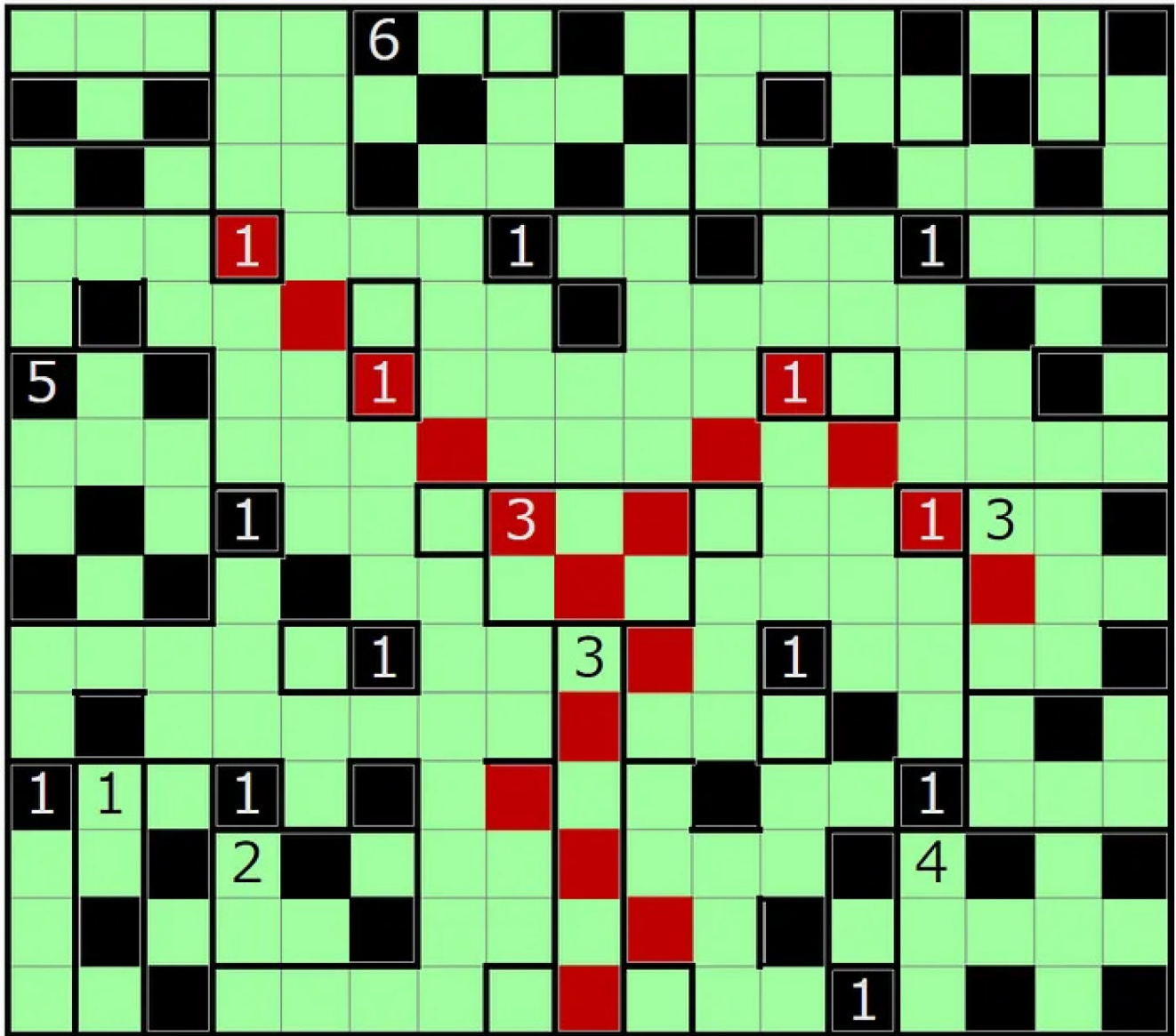
This path is incorrect.

That leads us to the sole path on the left side:

From here, it's not very difficult to complete the whole puzzle. I have already stretched out this walkthrough long enough, and I don't intend to write more. In that case, here's the

Final solution

Thanks for reading this walkthrough! It's my first time documenting the detailed solve path of a puzzle, having done so perhaps a little too verbosely. Any critiques welcome. Honest, it's my first time writing anything blogpost-y at all, I registered Medium for this.

Should I plug my Twitter? Or is it called X now? Confusing times.

Puzzle   Heyawake   Nikoli   へやわけ