
Problem of the Week

Number Ten

April 8, 2013

Well, here it is. The Final Problem. Not the famous Sherlock Holmes story, of course. *That's* the one where Holmes has his one and only meeting with Professor Moriarty, culminating in both of them toppling over Switzerland's Reichenbach Falls. I am hopeful that the amusing item below shall not lead to anything quite so dramatic. Nor should the final problem be confused with The Last Question, which was a famous short story by Isaac Asimov about the heat death of the universe. Come to think of it, that's also pretty dramatic, so perhaps we should just get on with it.

Ladies and gentlemen, the final problem of the week for the spring 2013 semester:

I have a remarkable plant. It grows very rapidly, you see. At the end of the first day it had increased its height by a factor of $\frac{1}{2}$. At the end of the second day it had increased its height by a factor of $\frac{1}{3}$ beyond where it was at the end of the first day. At the end of the third day it had increased its height by a factor of $\frac{1}{4}$ beyond where it was at the end of the second day. This pattern continues, so that by the end of the n -th day, the plant has increased its height by a factor of $\frac{1}{n+1}$ beyond where it was at the end of the day before. How many days did it take to grow to one hundred times its original height?

Solutions are due to Jason Rosenhouse by 5:00 on Friday, April 12. One weekly winner will receive a five-dollar gift card from Starbucks. Winners will be drawn randomly from among the correct answers. Hand in your solutions on this paper, with your name on the front in the upper right corner, and your clearly-explained solution on the back. Be sure to check out the POTW website:

<http://educ.jmu.edu/~rosenhjd/POTW/Spring13/spring13.html>