Math 290-Number Theory for Teachers
Problem of the Day #22
Due Wednesday, April 9, 2014

1. Consider the infinite repeating continued fraction:

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\ddots}}}$$

What is its value? Compute some convergents. What do you notice?

2. For the continued fraction above, compute the differences between consecutive convergents. Do the same thing for $[\overline{1,1,10}]$. What do you notice about the closeness of the convergents, particularly in the places where these two continued fractions differ?