Note $\dfrac{1}{\sqrt{2}+1}=\sqrt{2}-1$

Therefore, the denominator of the continued fraction is equivalent to $\sqrt{2}+1$.
Then subtracting 1 from the terms in the sequence for the denominator gives the sequence for $\sqrt{2}$, byt with a first term of 1 instead of 3/2.
Letting $r=\sqrt{2}$, we have:

$$1<r<\frac{3}{2},\ \frac{7}{5}<r<\frac{3}{2},\ \frac{7}{5}<r<\frac{17}{12},\ \frac{41}{29}<r<\frac{17}{12}$$

Here's another:
The fractions for $1+\sqrt{2}$ are: 2/1, 5/2, 12/5, 29/12, 70,79, …

Let $r=\sqrt{2}$, the formula $\dfrac{\left((1+r)^n-(1-r)^n\right)}{2r}$ gives the values 1, 2, 5, 12, 29, 70, …

I got this idea from the formula for the Fibonacci numbers.

Suppose we call this sequence $a(n)$ and we compute $\dfrac{a(n+1)}{a(n)}-1$

What would the limit be?
Could it be $\sqrt{2}$???