In the debating club 373.4
Continuation of 373.2 and 373.3
Cadenca 373.4.1

$\Phi^{24} = 103681.999990355124321550 28\ldots \approx 103682$

$scf(\Phi^{24}-1) = [103680,1,103680,1,103680,1,103680, \ldots]$

$int(\Phi^{24}-1) = 103680 = 3!*4!*6!$

$= 3*(1!*2!*3!*4!*5!)$

$$\frac{int(\Phi^{24}-1)}{24} = \frac{int(\Phi^{4!}-1)}{4!} = 4320 = 2^5 * 3^3 * 5^1 = 3! * 6!$$

$scf(\Phi^n-1) = [a_0;a_1,a_2,a_1,a_2,a_1,a_2,a_1,a_2,\ldots]$

$a_0 = int(\Phi^n-1)$

$a_1 = 1, a_2 = a_0$ for n is even

$a_1 = a_2 = a_0+1$ for n is odd

Conjecture

a_0 modn = 0 and n is odd and $a_0 \notin$ Lucas.pseudoprimes $\Leftrightarrow$ n is prime

References

[9] https://en.wikipedia.org/wiki/Lucas_pseudoprime

[10] Weisstein, Eric W. "Lucas Pseudoprime." From *MathWorld*--A Wolfram Web Resource. http://mathworld.wolfram.com/LucasPseudoprime.html

[11] https://oeis.org/search?q=Lucas+pseudoprime&language=german&go=Suche

Cadenca 373.4.2

$f(n) = \mathrm{int}\left(\left(\frac{\pi}{2}\right)^n\right)$

$\langle f(n)\rangle_{n=1}^{\infty} =$

$\langle 1,2,3,6,9,15,23,37,58,91,143,225,354,556, \ldots \rangle$

Finde ein weiteres Bildungsgesetz dieser Folge (Rekursionsgleichung, Matrizengleichung, Determinantendarstellung, …).

Zeige:

$\lim_{n\to\infty} \frac{f(n+1)}{f(n)} = \frac{\pi}{2}$

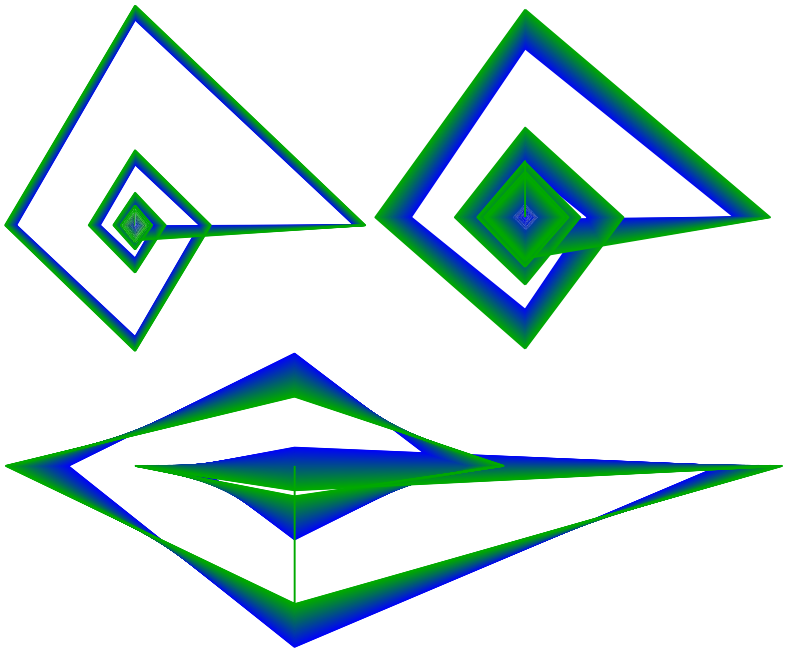
$\lim_{n\to\infty} \frac{f(n+2)-f(n+1)}{f(n+1)-f(n)} = \frac{\pi}{2}$.

Dito

$f(n) = \mathrm{int}\left(\left(\frac{e}{2}\right)^n\right)$

$\langle f(n)\rangle_{n=1}^{\infty} =$

$\langle 1,1,2,3,4,6,8,11,15,21,29,39,54,73,99,135,184, \ldots \rangle$



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