Unit n°193

Sandbox 3

$$2\sqrt{e}-3=[0;3,2,1,3,4,1,3,6,1,3,8,1,\ldots]$$

$$\frac{5-3\sqrt{e}}{5\sqrt{e}-8}=\frac{1}{2}[0;2,3,1,4,3,1,6,3,1,8,3,1,\ldots]$$

$$\frac{5-3\sqrt{e}}{2\sqrt{e}-3}=\frac{1}{2}[0;2,1,3,4,1,3,6,1,3,8,1,3,\ldots]$$

$$\sqrt[4]{e}-1=\frac{1}{2}[0;1,1,3,5,1,3,9,1,3,13,1,3,\ldots]$$

$$\sqrt[8]{e}-1=\frac{1}{2}[0;3,1,3,11,1,3,19,1,3,27,1,3,\ldots]$$

$$\sqrt[16]{e}-1=\frac{1}{2}[0;7,1,3,23,1,3,39,1,3,55,1,3,\ldots]$$

$$\sqrt[32]{e}-1=\frac{1}{2}[0;15,1,3,47,1,3,79,1,3,111,1,3,\ldots]$$

$$\frac{1}{\sqrt[n]{e}-1}=[n\text{-}1;1,1,3n\text{-}1,1,1,5n\text{-}1,1,1,7n\text{-}1,1,1,9n\text{-}1,1,\ldots]$$

$$=n\text{-}1+\frac{n|}{|2n\text{-}1}+\frac{2n|}{|3n\text{-}1}+\frac{3n|}{|4n\text{-}1}+\frac{4n|}{|5n\text{-}1}+\frac{5n|}{|6n\text{-}1}+\ldots$$

$$\frac{1}{2\left(\sqrt[2n]{e}-1\right)}=$$

$$[n\text{-}1;1,3,3n\text{-}1,1,3,5n\text{-}1,1,3,7n\text{-}1,1,3,9n\text{-}1,1,3,\ldots]=$$

$$n\text{-}1+\frac{|}{|}+\frac{|}{|}+\frac{|}{|}+\frac{|}{|}+\frac{|}{|}+\ldots \quad ;\ n=2,3,4,\ldots$$

$$\frac{1}{2\left(\sqrt[2n+1]{e}-1\right)}=$$

$$[n;3,1,3n,1,3,5n+2,3,1,7n+2,1,3,9n+4,3,1,$$

$$11n+4,1,3,13n+6,3,1,15n+6,1,3,\ldots]=$$

$$n+\frac{|}{|}+\frac{|}{|}+\frac{|}{|}+\frac{|}{|}+\frac{|}{|}+\ldots \quad ;\ n=2,3,4,\ldots$$

$$\sqrt[2n]{e} =$$

$$2[0;1,1,n\text{-}1;3,1,3n\text{-}1,3,1,5n\text{-}1,3,1,7n\text{-}1,3,1,9n\text{-}1,3,1,\ldots]$$

$$; n=2,3,4,\ldots$$

$$\sqrt[2n+1]{e} =$$

$$2[0;1,1,n\text{-}1;1,3,3n+1,3,1,5n+1,1,3,7n+3,3,1,9n+3,1,3,$$

$$11n+5,3,1,13n+5,1,3,\ldots] \quad ; n=2,3,4,\ldots$$

$$\sqrt[n]{e} + (2k-1) = 2[k;2n-1,6n,10n,14n,18n,22n,\ldots]$$

$$n=1,2,3,4,\ldots \; ; k=0,1,2,3,4,\ldots$$

$$\frac{n|}{|n\pm1} + \frac{2n|}{|2n\pm1} + \frac{3n|}{|3n\pm1} + \frac{4n|}{|4n\pm1} + \frac{5n|}{|5n\pm1} + \ldots = \begin{cases} ? \\ ?? \end{cases}$$

$$\frac{n\pm1|}{|n} + \frac{2n\pm1|}{|2n} + \frac{3n\pm1|}{|3n} + \frac{4n\pm1|}{|4n} + \frac{5n\pm1|}{|5n} + \ldots = \begin{cases} ? \\ ?? \end{cases}$$

$$\frac{n|}{|2n\pm1} + \frac{2n|}{|3n\pm1} + \frac{3n|}{|4n\pm1} + \frac{4n|}{|5n\pm1} + \frac{5n|}{|6n\pm1} + \ldots = \begin{cases} ? \\ ?? \end{cases}$$

$$\frac{2n\pm1|}{|n} + \frac{3n\pm1|}{|2n} + \frac{4n\pm1|}{|3n} + \frac{5n\pm1|}{|4n} + \frac{6n\pm1|}{|5n} + \ldots = \begin{cases} ? \\ ?? \end{cases}$$

$$\frac{1|}{|2}+\frac{2|}{|3}+\frac{3|}{|4}+\frac{4|}{|5}+\frac{5|}{|6}+\frac{6|}{|7}+\frac{7|}{|8}+\frac{8|}{|9}+\frac{9|}{|10}+\frac{10|}{|11}+\frac{11|}{|12}+\frac{12|}{|13}+\ldots=$$

* ↑ ↑ ↑ ↑ ↑ ↑

** ↑ ↑ ↑ ↑

$$\frac{3-e}{e-2}=[0;2,1,1,4,1,1,6,1,1,8,1,1,10,1,1,\ldots]$$

$$=2[0;5,10,14,18,22,26,30,34,38,\ldots]$$

* $$\frac{2|}{|3}+\frac{4|}{|5}+\frac{6|}{|7}+\frac{8|}{|9}+\frac{10|}{|11}+\frac{12|}{|13}+\ldots=$$

$$\frac{2-\sqrt{e}}{\sqrt{e}-1}=[0;1,1,5,1,1,9,1,1,13,1,1,17,1,1,\ldots]$$

$$=\frac{1}{2}[1;12,20,28,36,44,52,60,\ldots]$$

** $$\frac{3|}{|4}+\frac{6|}{|7}+\frac{9|}{|10}+\frac{12|}{|13}+\frac{15|}{|16}+\frac{18|}{|19}+\ldots=?$$

An e 1-3 + double-helix curiosity
+ convergence acceleration

$$\frac{e}{e-1}=2*[0,1,3,\downarrow$$

1,3,1, 1,1,3,

$$3,3,1,\ \ 3,1,3,$$
$$5,3,1,\ \ 5,1,3,$$
$$7,3,1,\ \ 7,1,3,$$
$$9,3,1,\ \ 9,1,3,$$
$$11,3,1,11,1,3,$$
$$13,3,1,13,1,3,$$
$$15,3,1,15,1,3,$$
$$17,3,1,17,1,3,$$
$$19,3,1,19,1,3,$$
$$21,3,1,21,1,3,$$
$$23,3,1,23,1,3,$$
$$25,3,1,25,1,3,\ldots]$$

$$= \frac{1}{2}[3;6,10,14,18,22,26,30,\ldots]$$

For comparison

$$\frac{\sqrt{e}}{\sqrt{e}-1} = 2[1,3,1,\downarrow$$

$$2,3,1,\ \ 4,3,1,$$
$$6,3,1,\ \ 8,3,1,$$
$$10,3,1,12,3,1,$$
$$14,3,1,16,3,1,$$
$$18,3,1,20,3,1,\ldots]$$

$$= \frac{1}{2}[5;12,20,28,36,44,52,60,\ldots]$$

$$\frac{e^2}{e^2-1} = \frac{1}{2}[2;3,5,7,9,11,13,15,...]$$

e scf structures

e = [2;↓
1, 2,1, 1, 4,1,
1, 6,1, 1, 8,1,
1,10,1, 1,12,1,
1,14,1, 1,16,1,
1,18,1, 1,20,1,
1,22,1, 1,24,1,…]

= 2[1;2,↓
, 1,3, 1, 1,1,
3, 3,3, 1, 3,1,
3, 5,3, 1, 5,1,
3, 7,3, 1, 7,1,
3, 9,3, 1, 9,1,
3,11,3, 1,11,1,…]

= $\frac{1}{2}$[5;2,↓
3, 2,3, 1, 2,1,
3, 4,3, 1, 4,1,
3, 6,3, 1, 6,1,
3, 8,3, 1, 8,1,
3,10,3, 1,10,1,
3,12,3, 1,12,1,…]

= 1+ 2[0;1,6,10,14,18,22,26,30,…]

** Fill in all the white spots on this e-map!
F.i. [0;3,f(1),3, 1,f(1),1,
3,f(2),3, 1,f(2),1,

3,f(3),3, 1,f(3),1,
3,f(4),3, 1,f(4),1,
3,f(5),3, 1,f(5),1,
3,f(6),3, 1,f(6),1,…] = E(f(i))

for f(i) = i

2i

2i-1

i^2

fib(i)

p_i

$\lambda(i)$

$$\langle \lambda(i) \rangle_{i=1}^{\infty} = 1,5,7,11,13,17,19,23,25,29,31,35,37,$$

$$41,43,47,49,53,55,59,...$$

** Transpose the sandbox 3 problems into 3D.