

$$\frac{1}{\log(10,2)} = 0.3010299957$$

$$\text{floor}(\log(10,2)) = 3$$

$$n := 2 \dots 36$$

$$\textcolor{green}{A}_n := \log(n,2)$$

$$A =$$

	0
0	0
1	0
2	1
3	1.585
4	2
5	2.322
6	2.585
7	2.807
8	3
9	3.17
10	3.322
11	3.459
12	3.585
13	3.7
14	3.807
15	...

$$n := 1 \dots 10 \quad x_n := 0.2 \cdot n$$

$$\textcolor{green}{l}_n := \ln\bigl(x_n\bigr)$$

$$\textcolor{green}{L}_n := \text{LN2}\bigl(x_n\bigr)$$

$$\text{LN}(z) := 2 \cdot \sum_{n=0}^{17} \left[ \frac{1}{2n+1} \cdot \left( \frac{z-1}{z+1} \right)^{2n+1} \right]$$

$$x := 0.5, 0.6 \dots 2$$

$$(\ln(x) - \text{LN2}(x)) =$$

0
0
0
0
0
0
0
0
-5.551·10 <sup>-17</sup>
5.551·10 <sup>-17</sup>
5.551·10 <sup>-17</sup>
0
0
1.11·10 <sup>-16</sup>
-1.11·10 <sup>-16</sup>
-1.11·10 <sup>-16</sup>

$$\xrightarrow{\ln(2)} \text{float}$$

```

LN2(z) :=
  term0 ←  $\frac{z-1}{z+1}$ 
  extra ← 10
  sum ← term0

  mult ← (term0)2
  n ← 1
  while 1
    termn ← termn-1 · mult
    old ← sum
    sum ← sum +  $\frac{\text{term}_n}{2n+1}$ 
    n ← n + 1
    if old = sum
      extra ← extra - 1
      (break) if ¬extra
  sum ← 0
  for i ∈ n - 1 .. 0
    sum ← sum +  $\frac{\text{term}_i}{2i+1}$ 
  return 2 · sum

```

at, 20 → 0.69314718055994530942

LN2(2) = 0.6931471805599453

ln(2) = 0.6931471805599453

LN(2) = 0.6931471805599451