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2. 10 => 1010_2

.634525 x2 = 1.269145

x2 = 0.53829

x2 = 1.07658

x2 = 0.15316

x2 = 0.30632

x2 = 0.61264

x2 = 1.22528

x2 = 0.45056

x2 = 0.9012

x2 = 1.80241

x2 = 1.60482

x2 = 1.20964

x2 = 0.41928

x2 = 0.83584

x2 = 1.67168

x2 = 1.34336

x2 = 0.68672

x2 = 1.37344

x2 = 0.74688

x2 = 1.49376

sign bit = 0

significand = 1010

exponent = 00000011

Binary: 0 1010 1000 1001 1100 1101 $x2^3$

01000001

Hex: 0x412A2735

2. 53.967

sign: 1

exponent: 00000000101

$110101_2 = 53$

use python to do x2 algorithm

1.10101111101111011110111000110101001111101111010

01110110110010 $\times 2^5$

Hex: 0x4257de35

3. E5B0 0000

negative ← 1110 0101 1011 0000 0000 0000 0000 0000

exponent: $11001011 = 203_{10}$

$e = 203 - 127 = 76$

$-1 \times (1.011000\ldots)_2 \times 2^{e}$

Decimal = $-1 \times 1.375 \times 2^{76}$

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main.py saved

```
x= 0.967
y = []
i = 0

while i<47:
  x=x*2
  if x<1:
    y.append(0)
  else:
    x=x-1
    y.append(1)
  i+=1

for j in y:
  print(j)
```

```
1
1
1
1
0
0
0
1
1
0
1
0
1
0
0
1
1
1
1
1
1
1
0
1
1
1
1
1
1
0
0
1
1
1
0
1
1
0
1
1
0
0
1
0
```