Exerace noté #1

a) → #1.   base 7. 7^4 7^3 7^2 7^1 7^0
         (5 bits)   2401 343 49 7 1

b) $2AA3_{16}$ → 10

   $\underset{2}{\underline{0010}}$ $\underset{A=10}{\underline{1010}}$ $\underset{A=10}{\underline{1010}}$ $\underset{3}{\underline{0011}}$ = $\underset{15\,14\,13\,12\,11\,10\,9\,8\,7\,6\,5\,4\,3\,2\,1\,0}{0010101010100011}_2$

   = $2^{13} + 2^{11} + 2^9 + 2^7 + 2^5 + 2^1 + 2^0$ = 8192+2048+512+128+32+2+1
                                                    = 10 915

c) $4B_{16}$ → 10

   $\underset{4}{\underline{0100}}$ $\underset{B=11}{\underline{1011}}$ = $\boxed{\underset{7\,6\,5\,4\,3\,2\,1\,0}{01001011}_2}$ = $2^6 + 2^3 + 2^1 + 2^0$
                                                            = 64 + 8 + 2 + 1
                                                            = $\boxed{75_{10}}$

   $4B_{16}$ → $\boxed{001}\boxed{00}\boxed{011}_2$ or   75 $\boxed{(113)_8}$
              $\underset{4}{}$ $\underset{B}{}$ $\underline{-64}$
   (1   1   3)$_8$ 11
                                                                  $\underline{-8}$
                                                                    3

d) 1011_{10} → 16 de US

			2^9								
			512	256	128	64	32	16	8	4	2	1

   $\underset{3}{\underbrace{0\ 0\ 1}}$ $\underset{15=F}{\underbrace{1\ 1\ 1\ 1}}$ $\underset{3}{\underbrace{0\ 0\ 1\ 1}}$

   $0x3F3_{16}$

   $\boxed{= 0x\,3F3}$

e) 0x ee $\underset{e=14}{\underline{1110}}$ $\underset{e=14}{\underline{1110}}$ = 11101110_2 = $2^7 + 2^6 + 2^5 + 2^3 + 2^2 + 2^1$
   e = 14   = 128 + 64 + 32 + 8 + 4 + 2
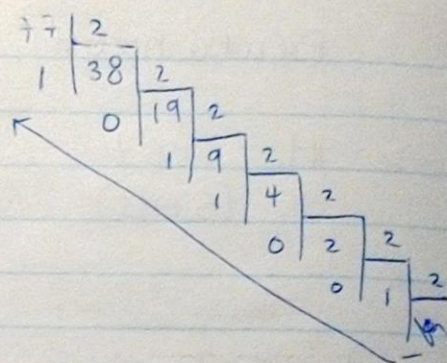   = $\boxed{238_{10}}$

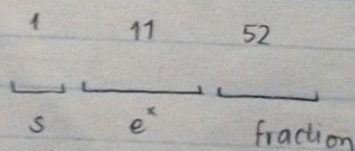#2. $17_{10} \rightarrow$ convention non signée
sur 5 bits.

$$10001_2$$

16 + 1
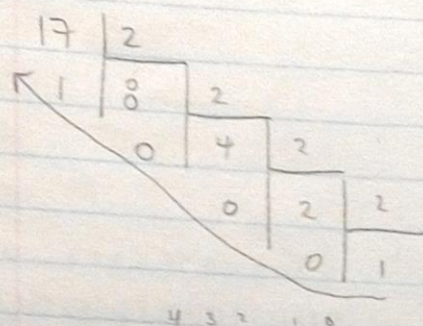
#3. (a) $\overset{4\ 3\ 2\ 1\ 0}{01101}$

$$2^0 + 2^2 + 2^3 = 1 + 4 + 8 = \boxed{13_{10}}$$

(b) $\overset{4\ 3\ 2\ 1\ 0}{10011}$

$$2^0 + 2^1 + 2^4 = 1 + 2 + 16 = \boxed{19_{10}}$$

#4. IEEE 754, 64 bits

(a) 3.15

$$\underbrace{}_{S} \quad \underbrace{}_{e^x} \quad \underbrace{}_{fraction}$$

1   11   52

$3_{10} \rightarrow 11_2$

$0.15_{10} \rightarrow$

$0.15 \times 2 = 0.30$
$0.30 \times 2 = 0.60$
$0.60 \times 2 = 1.20$
$0.20 \times 2 = 0.40$
$0.40 \times 2 = 0.80$
$0.80 \times 2 = 1.60$
$0.60 \times 2 = 1.20$
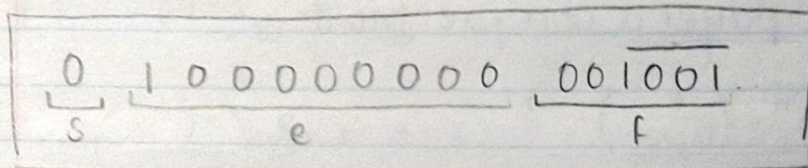$0.20 \times 2 = 0.40$ } répétition
$0.40 \times 2 = 0.80$
$0.80 \times 2 = 1.60$

$\overline{001001}$

$3.15_{10} = 11.00\overline{1001}_2$

normalisation $1.100\overline{1001}_2 \times 10^1$

encoder l'exposant: $e^1 = 1 + 1023 = 1024$

$= (1024) \cdot 12 = 10000000000_2$

$$\boxed{\underset{s}{\underline{0}} \,,\, \underset{e}{\underline{1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0}} \,\, \underset{f}{\underline{0\ 0\ \overline{1\ 0\ 0\ 1}}}}$$
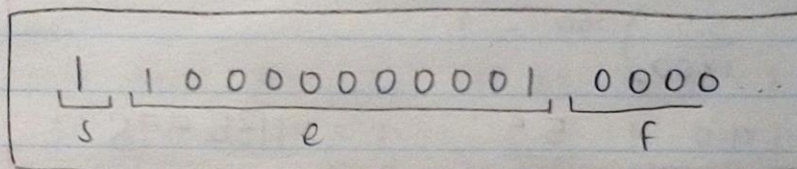
(b) $\left| -4_{10} \right| = +4_{10} = 100_2$

normalisation: 1.00×10^2

$e^2 = 2 + 1023 = 1025_{10} = 1024 + 1$
10000000001_2

$$\boxed{\underset{s}{\underline{1}} \,,\, \underset{e}{\underline{1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 1}} \,,\, \underset{f}{\underline{0\ 0\ 0\ 0}} \dots}$$

#5. 10, 2, 3, 4 , 1x chaque
$+, -, *$. le $\ominus$ de caractères possibles.
$= 9$

$10 - (2 \cdot 3) + 4$ $10 + 4 - (2 \cdot 3)$
$10 - 5 + 4$ $\boxed{10 + 4 - 2 \cdot 3}$
$\quad 5 + 4$
$\qquad 9$

#6 p: montant du prêt
n: nb de mois
i: taux d'intérêt annuel en %
m: montant