Réponses Série 3 Syst. numération

Exercice 1

1. $(1011.01101)_2 = 2^3 + 2 + 1 + 2^{-2} + 2^{-3} + 2^{-5} = 11.40625$

2. $(32.304)_5 = 3 \cdot 5 + 2 + 3 \cdot 5^{-1} + 4 \cdot 5^{-3} = 17.632$

3. $(1; 27.2; 25)_{125} = 125 + 27 + 2 \cdot 125^{-1} + 25 \cdot 125^{-2} = 152.0176$

Exercice 2

1.

$$\begin{array}{rcll} 0.15 \cdot 4 & = & 0.6 & 0 \\ \hline 0.6 \cdot 4 & = & 2.4 & 2 \\ 0.4 \cdot 4 & = & 1.6 & 1 \\ \hline 0.6 \cdot 4 & = & 2.4 & 2 \end{array}$$

donc $0.15 = (0.0\overline{21})_4$.

2.

$$\begin{array}{rcll} 0.31 \cdot 5 & = & 1.55 & 1 \\ 0.55 \cdot 5 & = & 2.75 & 2 \\ \hline 0.75 \cdot 5 & = & 3.75 & 3 \\ \hline 0.75 \cdot 5 & = & 3.75 & 3 \end{array}$$

donc $0.31 = (0.12\overline{3})_5$.

3.

$$\begin{array}{rcrcl} 684 & = & 5 \cdot 136 & + & 4 \\ 136 & = & 5 \cdot 27 & + & 1 \\ 27 & = & 5 \cdot 5 & + & 2 \\ 5 & = & 5 \cdot 1 & + & 0 \\ 1 & = & 5 \cdot 0 & + & 1 \end{array}$$

donc $684 = (10214)_5$.

$$\begin{array}{rcrl} 0.04704 \cdot 5 & = & 0.2352 & 0 \\ 0.2352 \cdot 5 & = & 1.176 & 1 \\ 0.176 \cdot 5 & = & 0.88 & 0 \\ 0.88 \cdot 5 & = & 4.4 & 4 \\ 0.4 \cdot 5 & = & 2.0 & 2 \end{array}$$

donc $0.04704 = (0.01042)_5$.

Finalement on obtient: $684.04704 = (10214.01042)_5$.
En utilisant les mêmes méthodes que ci–dessus, on trouve

4. $0.4703 = (0.2133\overline{4320})_5$

Exercice 3

1. $(101.00100)_2 = (5.28)_{16}$

2. $(456.65)_7 = (4; 41.47)_{49}$

3. $(32.014)_5 = (17.1; 20)_{25}$

Exercice 4

1. $(10\,111.101\,011)_2$

2. $(11\,0111\,1001.1101)_2$ **3.** $(11\,1010\,0101.1100\,1111)_2$

Exercice 5

1. $(1441)_8$ **2.** $(521.042)_8$ **3.** $(126F1)_{16}$ **4.** $(D9.22)_{16}$