Exercice 1

1) $(4013)_5 = (508)_{10}$

2) $(508)_{10} = (200211)_3$

Exercice 2

1) $127 \equiv 6 \ [11]$ donc $X = 6$

$0 \leq 6 \leq 10$

2) $101 \equiv 2 \ [33]$

$2 \equiv -97 \ [3]$ donc $Y = -97$

$-128 \leq -97 \leq -96$

Exercice 3

a)

-42	-8
6	6

$-42 = (-8) \times (6) + 6$

$0 \leq 6 < |-81$

quotient = 6 reste = 6

b)

97	-13
7	-7

$97 = (-13)(-7) + 6$

$0 \leq 6 < |-71$

quotient = -7 reste = 6

Exercice 4

1) $3^0 \equiv 1$ $3^4 \equiv 1 \ [5]$

$3^1 \equiv 3$ $3^5 \equiv 3 \ [5]$

$3^2 \equiv 4$ $3^6 \equiv 4 \ [5]$

$3^3 \equiv 2$ $3^7 \equiv 2 \ [5]$

2) $243^{942} \equiv 3^{942} \ [5]$

942	4
2	235

$3^{942} \equiv 3^2 \equiv 4 \ [5]$

le reste est 4