

Laborator 3

1. $47:2=23$ rest 1

$23:2=11$ rest 1

$11:2=5$ rest 1

$5:2=2$ rest 1

$2:2=1$ rest 0

$1:2=0$ rest 1

$\Rightarrow 47_{(10)} = 101111_{(2)}$

2. $27:2=13$ rest 1

$13:2=6$ rest 1

$6:2=3$ rest 0

$3:2=1$ rest 1

$1:2=0$ rest 1

$\Rightarrow 27_{(10)} = 00011011_{(2)}$


$\Rightarrow -27_{(10)} = 10011011_{(2)}$

3. $3 \cdot 16^0 + 1 \cdot 16^1 + 2 \cdot 16^2 = 3 + 16 + 2 \cdot 256 = 531$

$\Rightarrow 213_{(16)} = 531_{(10)}$


4. $1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 + 1 \cdot 2^{-1} + 0 \cdot 2^{-2} + 1 \cdot 2^{-3} = 16 + 4 + 2 + 0,5 + 0,125 = 22,625$

$\Rightarrow 10110.101_{(2)} = 22,625_{(10)}$

5. $34:4 = 8$ rest 2 

$8:4 = 2$ rest 0

$2:4 = 0$ rest 2

$0.625 \cdot 4 = 2.500$ 

$0.5 \cdot 4 = 2.0$

$\Rightarrow 34.625_{(10)} = 202.22_{(4)}$

6. $1 \cdot 2^0 + 1 \cdot 2^1 + 0 \cdot 2^2 + 1 \cdot 2^3 + 1 \cdot 2^4 + 0 \cdot 2^5 = 27$

$\Rightarrow 011011_{(2)} = 27_{(10)}$

7. -27 exces 32 pe 6 biti

$32 - 27 = 5$

$\Rightarrow 000101_{(2)} = -27_{(10)}$

8. $(0001)(1011) = 1B_{(16)}$

9.

55 : 2 = 27 rest **1** ↑
27 : 2 = 13 rest **1**
13 : 2 = 6 rest **1**
6 : 2 = 3 rest **0**
3 : 2 = 1 rest **1**
1 : 2 = 0 rest **1** ↓

0.875 * 2 = **1.750**
0.75 * 2 = **1.50**
0.5 * 2 = **1.0** ↓

55.875₍₁₀₎ = **110111.111**₍₂₎

10. 132.2₍₄₎

(01)(32).(20)₍₄₎ = **1E.8**₍₁₆₎

11. 0.201₍₃₎ → ₍₁₀₎

$$2 \cdot 3^{-1} + 0 \cdot 3^{-2} + 1 \cdot 3^{-3} = \frac{2}{3} + \frac{1}{27} = 0.(703)$$

0.201₍₃₎ = **0.(703)**₍₁₀₎