Aufgabe 7.1

1. 1. a=01001011 b=11001110

2. a AND b = 01001010

3. NOT(a AND b) = 10110101

1. 1. a=01001011 b=11001110 -> NOT(b)=00110001

2. a OR NOT(b) = 011110001

3. RotateRight(a OR (NOT(b))= 10111101

Aufgabe 7.2

1. NOT(x OR y)= NOT(x) AND NOT(y)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | y | NOT(x) | NOT(y) | (x)AND(y) | NOT(x)ANDNOT(y) | (x)OR(y) | NOT(xORy) |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |

1. NOT(x AND y) = NOT(x) OR NOT (y)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | y | NOT(x) | NOT(y) | (x)AND(y) | NOT(xANDy) | (x)OR(y) | NOT(x)ORNOT(y) |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |

Aufgabe 7.3

1. 42310 N= 8

|  |  |  |
| --- | --- | --- |
| Ri | / Bi | bi |
| n = 423 | 28=256 | b8=1 |
| 423-256=167 | 27=128 | b7=1 |
| 167-128=39 | 26=64 | b6=0 |
| 39-0=39 | 25=32 | b5=1 |
| 39-32=7 | 24=16 | b4=0 |
| 7-0=7 | 23=8 | b3=0 |
| 7-0=7 | 22=4 | b2=1 |
| 7-4=3 | 21=2 | b1=1 |
| 3-2=1 | 20=1 | b0=1 |

**1101001112**

42310 N= 5

|  |  |  |
| --- | --- | --- |
| Ri | / Bi | bi |
| n=423 | 35=243 | b5=1 |
| 423-243=180 | 34=81 | b4=2 |
| 180-2\*81=18 | 33=27 | b3=0 |
| 18-0=18 | 32=9 | b2=2 |
| 18-2\*9=0 | 31=3 | b1=0 |
| 0-0=0 | 30=1 | b0=0 |

**1202003**

42310 N= 2

|  |  |  |
| --- | --- | --- |
| Ri | / Bi | bi |
| n=423 | 82=64 | b2=6 |
| 423-6\*64=39 | 81=8 | b1=4 |
| 39-4\*8=7 | 80=1 | b0=7 |

**6478**

42310 N= 2

|  |  |  |
| --- | --- | --- |
| Ri | / Bi | bi |
| n=423 | 92=81 | b2=5 |
| 423-5\*81=18 | 91=9 | b1=2 |
| 18-18=0 | 90=1 | b0=0 |

**5209**

1. 19,627

|  |  |  |
| --- | --- | --- |
| Ri | / Bi | bi |
| 19-16=3 | 24=16 | b4=1 |
| 3-0=3 | 23=8 | b3=0 |
| 3-0=3 | 22=4 | b2=0 |
| 3-2=1 | 21=2 | b1=1 |
| 1-1=0 | 20=1 | b0=1 |

100112 = 1910

0,627

|  |  |  |  |
| --- | --- | --- | --- |
| 0,627 | \*2 | 1,254 | 1 |
| 0,254 | \*2 | 0,508 | 0 |
| 0,508 | \*2 | 1,016 | 1 |
| 0,016 | \*2 | 0,032 | 1 |

0,10102 =0,627 -> 10011,10102 = **19,627**

19,62710=**23,50108**

19,62710=**13,A08316**

Aufgabe 7.4

1. 10110102=**9010**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Ziffern | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| + | - | 1\*2 | 2\*2 | 5\*2 | 11\*2 | 22\*2 | 45\*2 |
| ∑ | 1 | 2 | 5 | 11 | 22 | 45 | **90** |

2AF16=**68710**

|  |  |  |  |
| --- | --- | --- | --- |
| Ziffer | 2 | A (10) | F (15) |
| + | - | 2\*16 | 42\*16 |
| ∑ | 2 | 42 | 687 |

1. 24,3728 =**20.488210**

Aufgabe 7.5

1. 1101,11012; 13,58 = 1011,1012

1101,1101

+ 1011,101

**11001,0111**

Aufgabe 7.5

1. 1101,012; 4,28 = 100,102

1101,01

+ 100,10

**10001,10**

Aufgabe 7.6

0x0F101301 ->

|  |  |  |  |
| --- | --- | --- | --- |
| n+3 | n+2 | n+1 | n |
| 0000 0001 | 0001 0011 | 0001 0000 | 0000 1111 |