ESERCIZIO 1

$(22011,002)_3 \rightarrow 2$

$\beta_1 = 3 \qquad \beta_2 = 2$

$(22011)_3$

22011	2
02	11002
00	
01	
11	

IN BASE 10 È 4

0

11002	2
00	2001
00	
02	
0	

2001	2
00	1000
00	
01	
1	

IN BASE 10 È 3

1000	2
10	111
10	
1	

111	2
01	20
1	

20	2
00	10
0	

10	2
1	1

$(0)_3 = (0)_2$

$(0)_3 = (0)_2$

$(1)_3 = (1)_2$

$(1)_3 = (1)_2$

$(1)_3 = (1)_2$

$(0)_3 = (0)_2$

$(1)_3 = (1)_2$

$$\begin{array}{r|l} 1 & 2 \\ \hline 1 & 0 \end{array}$$

$(1)_3 = (1)_2$

$\Rightarrow (1\,1\,0\,1\,1\,1\,0\,0)_2$

$(0,002)_3$

$0,00\overset{1}{2} \cdot 2$

$0,011$

$(0)_3 = (0)_2$

$0,011 \cdot 2$

$0,022$

$(0)_3 = (0)_2$

$0,0\overset{1}{2}2 \cdot 2$

$0,121$

$(0)_3 = (0)_2$

$\overset{1}{0},\overset{1}{1}21 \cdot 2$

$1,012$

$(1)_3 = (1)_2$

$0,0\overset{1}{1}2 \cdot 2$

$0,101$

$(0)_3 = (0)_2$

$0,101 \cdot 2$

$0,202$

$(0)_3 = (0)_2$

$\overset{1}{0},2\overset{1}{0}2 \cdot 2$

$1,111$

$(1)_3 = (1)_2$

$0,111 \cdot 2$

$0,222$

$(0)_3 = (0)_2$

$0,222 \cdot 2$

$1,221$

$(1)_3 = (1)_2$

$0,221 \cdot 2$

$1,212$

$(1)_3 = (1)_2$

$\vdots$

$(0\,00\,1\,00\,1011\ldots)_2$

ESERCIZIO 2

1 00011011 0111001100001000000000

SEGNO = 1 => −

ESPONENTE = 00011011 $= 2^0 + 2^1 + 2^3 + 2^4 = 27$

$E = P + B$

$\Rightarrow P = E - B$

BIAS = 127

$\Rightarrow 27 - 127 = -100$

MANTISSA = 01110011000010000000000

$= 1 + 2^{-2} + 2^{-3} + 2^{-4} + 2^{-7} + 2^{-8} + 2^{-13}$

$= 1,4483$

$\Rightarrow -1,4483 \cdot 2^{(-100)} = -1,1433 \cdot 10^{-30}$

ESERCIZIO 3

$-145,07 \cdot 10^{-2} = -1,4507$

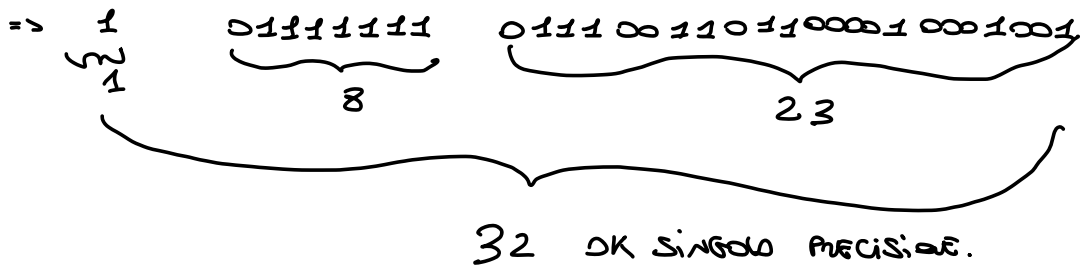
SEGNO = − => 1

ESPONENTE: CONVERTO IN BASE 2 (0): => $(0)_2 = (0)_{10}$

$\tilde{P} = P + BIAS = 0 + 127 = 127$

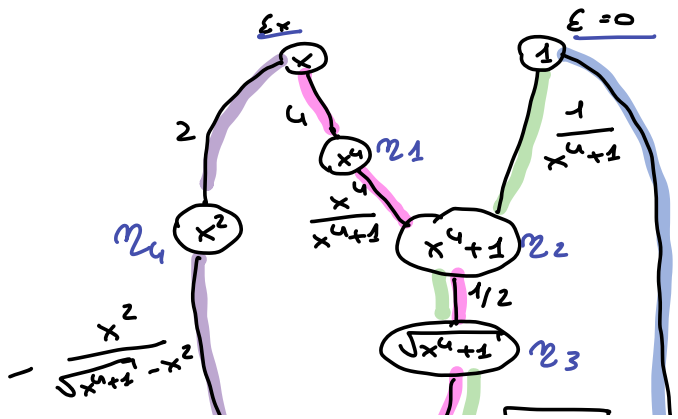
$(127)_{10} = (1111111)_2$

$0,4507 \cdot 2 = 0,8014 \quad 0$
$0,8012 \cdot 2 = 1,8028 \quad 1$
$0,8028 \cdot 2 = 1,6056 \quad 1$
$0,6056 \cdot 2 = 1,2112 \quad 1$
$0,2112 \cdot 2 = 0,4224 \quad 0$
$0,4224 \cdot 2 = 0,8448 \quad 0$
$0,8448 \cdot 2 = 1,6896 \quad 1$
$0,6896 \cdot 2 = 1,3792 \quad 1$
$0,3792 \cdot 2 = 0,7584 \quad 0$
$0,7584 \cdot 2 = 1,5168 \quad 1$
$0,5168 \cdot 2 = 1,0336 \quad 1$
$0,0336 \cdot 2 = 0,0672 \quad 0$
$0,0672 \cdot 2 = 0,1344 \quad 0$
$0,1344 \cdot 2 = 0,2688 \quad 0$
$0,2688 \cdot 2 = 0,5376 \quad 0$
$0,5376 \cdot 2 = 1,0752 \quad 1$
$0,0752 \cdot 2 = 0,1504 \quad 0$
$0,1504 \cdot 2 = 0,3008 \quad 0$
$0,3008 \cdot 2 = 0,6016 \quad 0$
$0,6016 \cdot 2 = 1,2032 \quad 1$
$0,2032 \cdot 2 = 0,4064 \quad 0$
$0,4064 \cdot 2 = 0,8128 \quad 0$
$0,8128 \cdot 2 = 1,6256 \quad 1$



Esercizio 6

$$f(x) = \frac{1}{\sqrt{(x^4+1)} - x^2}$$



$$\varepsilon_{x \pm y} = \frac{x}{x \pm y}\varepsilon_x \pm \frac{y}{x \pm y}\varepsilon_y$$

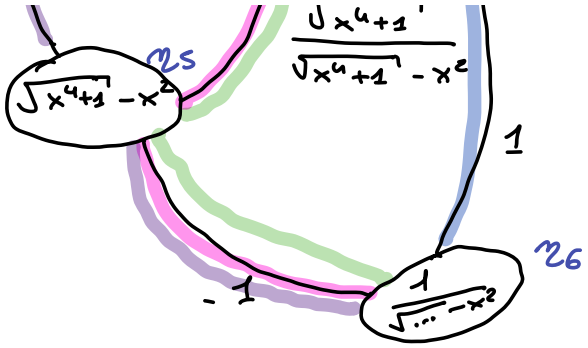
$$\varepsilon_{xy} = \varepsilon_x + \varepsilon_y$$

$$\varepsilon_{x/y} = \varepsilon_x - \varepsilon_y$$

$$\varepsilon_{\sqrt{x}} = \frac{1}{2}\varepsilon_x$$

$$\varepsilon_{x^\alpha} = \alpha\varepsilon_x$$

$$\varepsilon = \sum_i \frac{\partial f}{\partial x_i}\frac{x_i}{f}\varepsilon_{x_i}$$



$$\varepsilon_{DATI}: \quad 4 \cdot \frac{x^4}{x^4+1} \cdot \frac{1}{2} \cdot \frac{\sqrt{x^4+1}}{\sqrt{x^4+1}-x^2} \cdot (-1) \cdot \left(-\frac{x^2}{\sqrt{x^4+1}-x^2}\right) \cdot 2$$

$$= +4 \frac{x^4}{x^4+1} \cdot \frac{\sqrt{x^4+1}}{\sqrt{x^4+1}-x^2} \cdot \frac{x^2}{\sqrt{x^4+1}-x^2}$$

$$= 4 \frac{x^6\sqrt{x^4+1}}{(x^4+1)(\sqrt{x^4+1}-x^2)^2}$$

$\sqrt{x^4+1} = x^2$ QUI HO PROBLEMI

$x^4+1 = x^4$

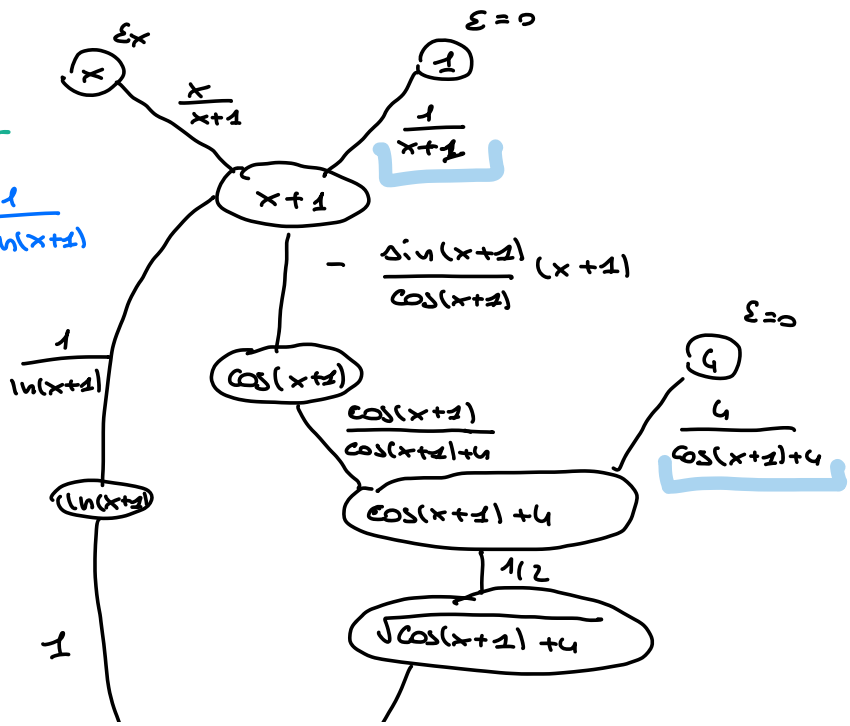
$1 = 0$

ESERCIZIO 7

$$f(x) = \ln(x+1)\sqrt{\cos(x+1)+4}$$

$\frac{df}{dx_i}\frac{x_i}{f} = \frac{-\sin(x+1)\cdot(x+1)}{\cos(x+1)}$

$\frac{df}{dx_i}\frac{x_i}{f} = \frac{1}{(x+1)} \cdot \frac{x+1}{\ln(x+1)} = \frac{1}{\ln(x+1)}$



$$\varepsilon_{DATI} = \frac{x}{x+1} \cdot \left(- \frac{\sin(x+1)(x+1)}{\cos(x+1)} \cdot \frac{\cos(x+1)}{\cos(x+1)+4} \cdot \frac{1}{2} \cdot \frac{1}{\ln(x+1)} \right)$$

$$= \left(- \frac{x \sin(x+1)}{\cos(x+1)+4} \cdot \frac{1}{2} \cdot \frac{x}{(x+1)\ln(x+1)} \right)$$

$x \geq -1$ NO PROBLEMI