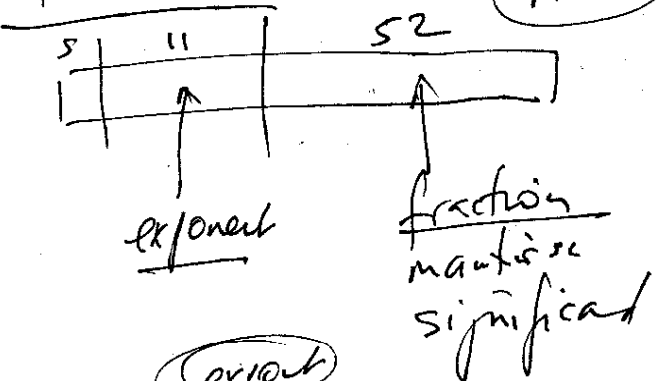
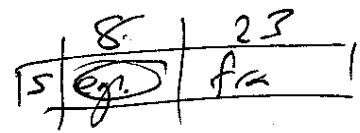


Fl. Pt.



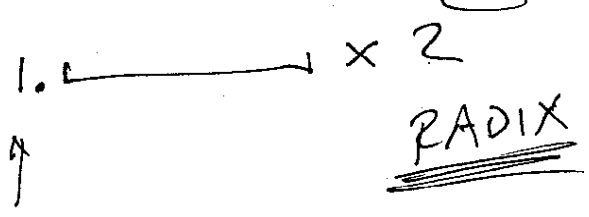
ADD 9



ADDF Fl. Pt. / 1

exponent

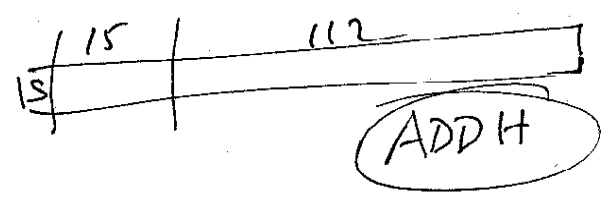
fraction
mantissa
significand



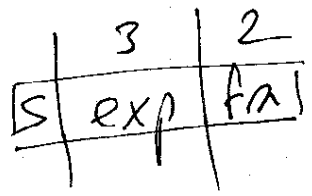
exponent
2

RANGE

PRECISION

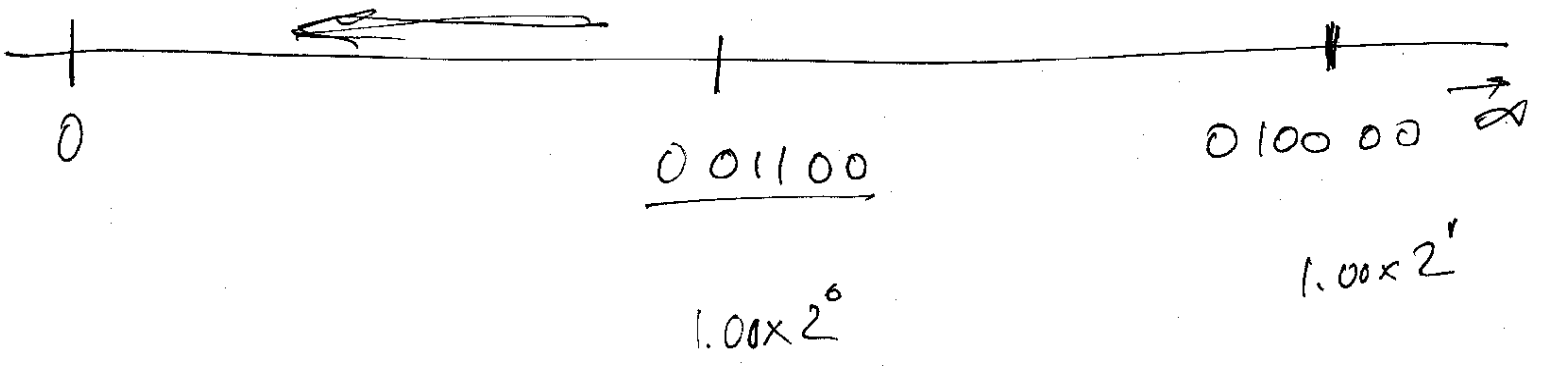


ADD H



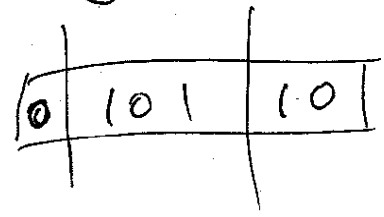
1

2



$+6\frac{5}{8}$

$110.101 = 1.10101 \times 2^2$

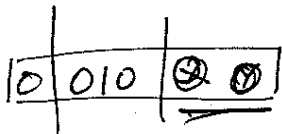
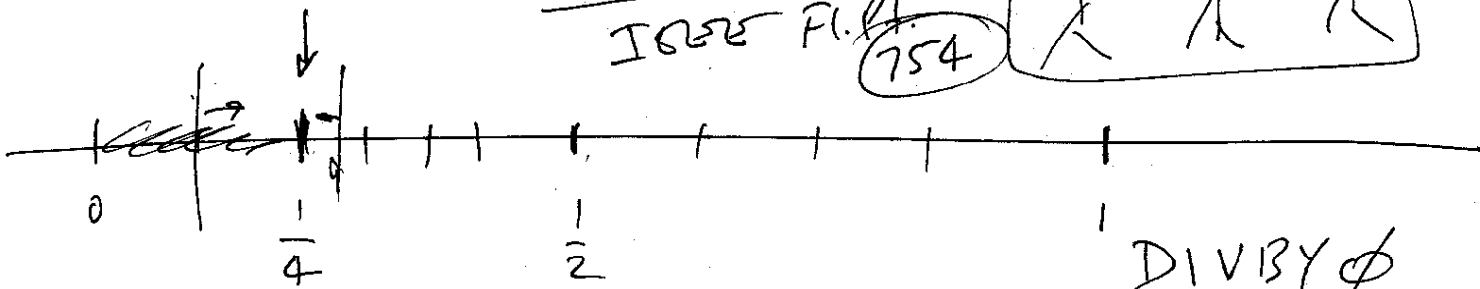
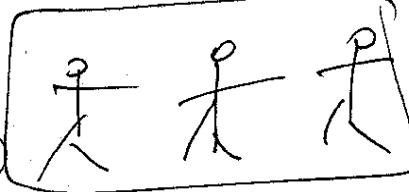


EXCESS
BIAS

$1.10 \times 2^2 = 6$

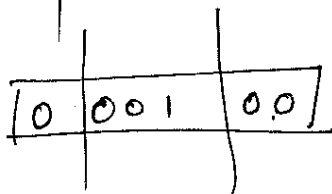
W. KAHAN

IEEE F.P. 754

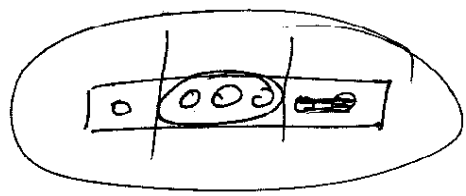
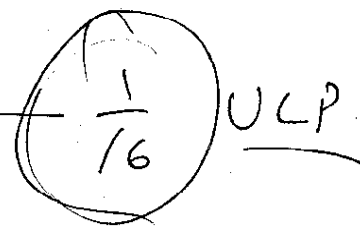


- DIVBY 0
- UNDERFLOW
- INEXACT
- OVERFLOW
- INVALID

$$\frac{1.00 \times 2^{-1}}{.01 \times 2^{-1}} \leftarrow \frac{1}{8} \text{ ULP}$$



$$\frac{1.00 \times 2^{-2}}{.01 \times 2^{-2}} \leftarrow \frac{1}{16} \text{ ULP}$$



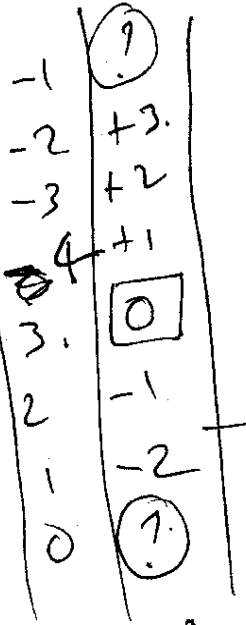
$$1.00 \times 2^{-2}$$

$$\begin{array}{r} 111 \text{ --- } 1 \\ \hline 111 \text{ --- } 0 \end{array}$$

$$\begin{array}{r} 1000 \text{ --- } 0 \\ \hline 01111 \text{ --- } 1 \end{array} \quad \begin{array}{l} 1024 \\ \hline 1023 \end{array}$$

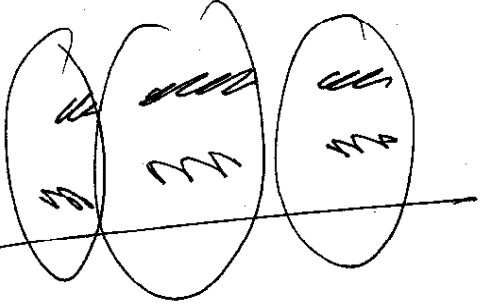
$$\begin{array}{r} 00 \text{ --- } 1 \\ \hline 00 \text{ --- } 0 \end{array} \quad ?$$

- 111
- 110
- 101
- 100
- 011
- 010
- 001
- 000

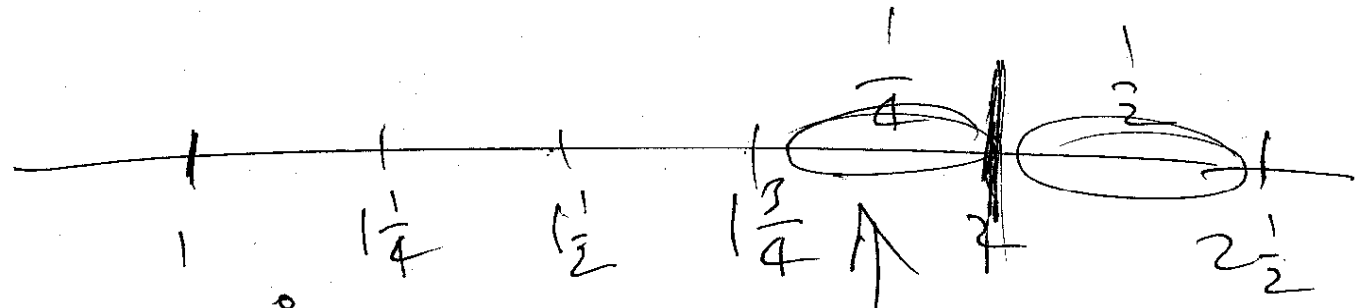


$$\frac{1 - 1023}{\quad}$$

$$\frac{2046}{1023}$$



$$1.XY \times 2$$



$$\begin{array}{r} 1.00 \times 2^0 \\ 0.01 \times 2^0 \\ \hline \end{array}$$

$$\begin{array}{r} 1.01 \times 2^0 \\ 0.01 \times 2^0 \\ \hline \end{array}$$

$$\begin{array}{r} 1.10 \times 2^0 \\ 0.01 \times 2^0 \\ \hline \end{array}$$

$$\begin{array}{r} 1.11 \times 2^0 \\ 0.01 \times 2^0 \\ \hline \end{array}$$

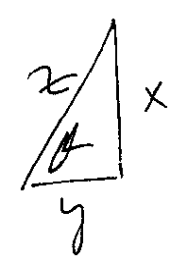
$$\begin{array}{r} 10.00 \times 2^0 \\ \hline 1.00 \times 2^1 \\ 0.01 \times 2^1 \\ \hline 1.01 \times 2^1 \end{array}$$

ULP

$$\begin{aligned} \infty + \tau &= \infty \\ \infty + \infty &= \infty \\ \infty - \infty & \end{aligned}$$

tangent (x)

$$\frac{1}{\frac{\infty}{\infty}} = \infty$$



$$\frac{1}{3 + \frac{1}{2 + \frac{1}{0}}}$$

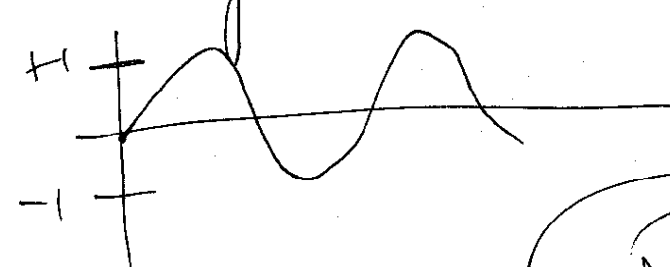
x = ~~2~~ 2

~~y = sin(x)~~
y = ARCSIN(x)

$$\frac{1}{0} + \frac{1}{0} = \infty$$

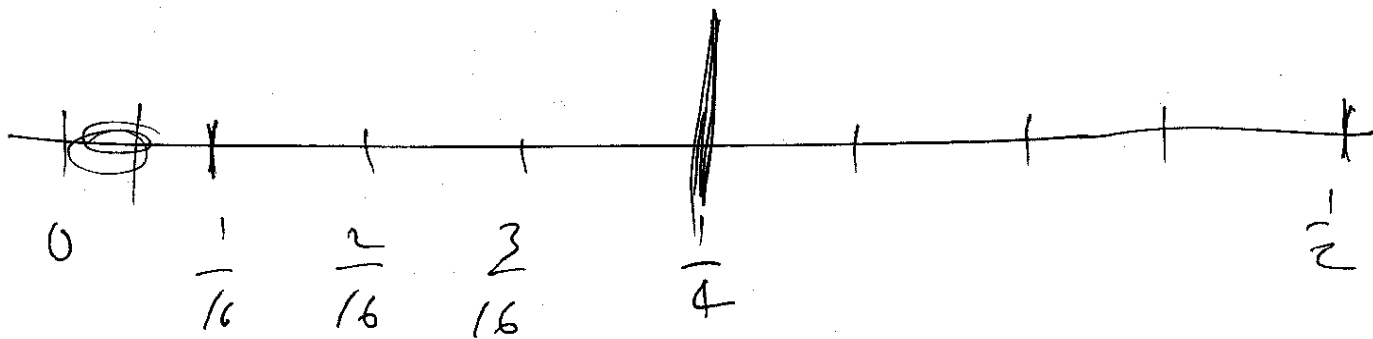
$$\frac{1}{0} - \frac{1}{0} = ?$$

$$\frac{\infty}{\infty}$$



NaN

SUB NORMAL



0 001 (00)

0010 00

0.00×2^{-2}

0.01×2^{-2}

0.10×2^{-2}

0.11×2^{-2}

1.00×2^{-2}

GRADUAL UNDERFLOW

