TAREA II

Serie de Taylor

a) Orden 3 de $f(x) = xe^x$ alrededor de origen.
Usar la aprox para $0.1\sqrt[10]{e}$

$f(x) = xe^x$ — $f(0) = 0$
$f'(x) = xe^x + e^x$ — $f'(0) = 1$
$f''(x) = xe^x + e^x + e^x$ — $f''(0) = 2$
$f'''(x) = xe^x + e^x + e^x + e^x$ — $f'''(0) = 3$
$= e^x(x+3)$

$$g(x) \approx \frac{0}{0!} + \frac{1}{1} + \frac{2}{2}(x)^2 + \frac{3}{3!}x^3 = x + x^2 + \frac{x^3}{2}$$

$$g(0.1) = (0.1) + (0.1)^2 + \frac{(0.1)^3}{2} = 0.1 + 0.01 + \frac{0.001}{2} = 0.1105$$

b) Aproxima $(0.2)^2$, orden 3 alrededor del origen.

$f(x) = x^2$ — $f(0) = 0$
$f'(x) = 2x$ — $f'(0) = 0$
$f''(x) = 2$ — $f''(0) = 2$
$f'''(x) = 0$ — $f'''(0) = 0$

$$g(x) = \frac{2(x)^2}{2!} = x^2$$

$$f(0.2) \approx (0.2)^2 = 0.04$$

Decimal a binario.

a) 272

÷	%
136	0
68	0
34	0
17	0
8	1
4	0
2	0
1	0
0	1

$= 100010000_2$

b) 16

÷	%
8	0
4	0
2	0
1	0
0	1

$= 10000_2$

c) 133

÷	%
66	1
33	0
16	1
8	0
4	0
2	0
1	0
0	1

$= 10000101_2$

Decimal a binario

a) $2.342_{10} = 10.0101_2$

0.342
0.646
1.366
0.732
1.464

b) $1.1134_{10} = 1.00011_2$

0.2768
0.4536
0.9072
1.8144
1.6288

c) $23.1213_{10} = 10111.00011$

23 ÷ 2
11 1
5 1
2 1
1 0
0 1

0.2426
0.4852
0.9704
1.9408
1.8816

Operaciones

a)
$$\begin{array}{r} 1101110 \\ +\ 100100 \\ \hline 10111010 \end{array} = 90$$

b)
$$\begin{array}{r} 1011010 \\ -\ 1001111 \\ \hline 1100111 \end{array} = 51$$

c)
$$\begin{array}{r} 1110 \\ \times\ 101 \\ \hline 1110 \\ 0000 \\ 1110 \\ \hline 1000110 \end{array}$$

d) $110110 \div 10$

10	11011
11	
10	
10	
0	

Binarias Operaciones (~2)

a) $225 + 76$

$$\begin{array}{r} 11100001 \\ +\ 01001100 \\ \hline 100101101 \end{array}$$

c) $225 - 76$

$$\begin{array}{r} 011100001 \\ +\ 110110100 \\ \hline 100101101 \end{array} \leftarrow (-76)_{C_2}$$

149_{10}

b) $-225 + 76$

$-225 = -11100001$

$(-225)_{C_2} = \boxed{1}0001111 + 1$

$$\begin{array}{r} 10001111 \leftarrow (-225)_{C_2} \\ +\ 01001100 \leftarrow 76 \\ \hline 11011011 \end{array}$$

$\rightarrow 10010101 = 149$

d) $-225 - 76$

$$\begin{array}{r} 10001111 \\ +\ 10110100 \\ \hline 101100011 \end{array}$$

se desborda