Matematicas Computacionales Evaluacion1.

1) Sean los conjuntos

A = {7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30}

B = {2,5,7,9,15,22,33}

C = {3,5,7,11,13,17,19,23,29}

$(A \cap C) \cup (A \oplus B)$ = {7,8,10,11,12,13,14,16,17,18,19,20,21,23,24,25,26,27,28,29,30,2,5,33}

$A \cap C$ = {7,11,13,17,19,23,29}

$A \oplus B$ = {8,10,11,12,13,14,16,17,18,19,20,21,23,24,25,26,27,28,29,30,2,5,33}

$((A \cup C) \oplus B)) \cap (A - C)$ = {8,10,12,14,16,18,20,21,24,25,26,27,28,30}

$(A \cup C) \oplus B)$ = {3,8,10,11,12,13,14,16,17,18,19,20,21,23,24,25,26,27,28,29,30,2,33}

$(A - C)$ = {8,9,10,12,14,15,16,18,20,21,22,24,25,26,27,28,30}

$((A \cup B) - (A \cap C)) \cap (A \cup B \cup C)$ = {2,5,8,9,10,12,14,15,16,18,20,21,22,24,25,26,27,28,30}

$(A \cup B) - (A \cap C)$ = {2,5,8,9,10,12,14,15,16,18,20,21,22,24,25,26,27,28,30}

$(A \cup B \cup C)$ = {2,3,5,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,33}

2)

a) De cuantas formas se puede conformar el comite si se quiere que ninguno este en el.

$C(6,4)$ $\quad \frac{6!}{(6-4)!\,4!} = 15$

b) Si se quiere que mario este en el comite

$C(7,4)$ $\quad \frac{7!}{(7-4)!\,4!} = 35$

c) Que ambos esten en el

$C(8,4)$ $\quad \frac{8!}{(8-4)!\,4!} = 70$

d) De cuantas formas si se quiere que mande

$$\frac{2.6}{1.3} = 4.$$

3) Convierta de forma manual de base 10 a la base indicada

a) 35 a base 2. = 100011.

35 | 2	17 | 2	8 | 2	4 | 2	2 | 2
↓ 17	↓ 8	↓ 4	↓ 2	↓ 1

b) 38 a

4. $x = 1,3 \qquad h = 0,002$

$f(x) = 0,3x^4 - 0,4x^3 + 0,9x^2 - 3x + 3.$

$f'(x) = 1,2x^3 - 1,2x^2 + 1,8x - 3$

$f''(x)\ 3,6x^2 - 2,4x + 1,8$

	X	f(x)
x_i	1,3	0,59903
x_i+1	1,302	0,5989363373
x_i-1	1,298	0,5991427187
x_i+2	1,304	0,5988617863
x_i-2	1,296	0,5992744378

▸ Primera diferencia finita dividida hacia adelante.

$f'(1,3) = \frac{0,5989363373 - 0,59903}{0,002} = -0,04683135$

▸ Primera diferencia finita dividida hacia atrás

$f'(1,3) = \frac{0,59903 - 0,5991427187}{0,002} = -0,05635935$

▸ Primera diferencia finita centrada

$f'(1,3) = \frac{0,5989363373 - 0,5991427187}{2(0,002)} = 0,05159535$

▸ Segunda diferencia finita dividida hacia adente.

$f''(1,3) = \frac{0,5988617863 - 2(0,5989363373) + 0,59903}{(0,002)^2} = 4,77792$

▸ Segunda diferencia finita dividida hacia atra.

$f''(1,3) = \frac{0,59903 - 2(0,5991427187) + 0,5992744378}{(0,002)^2} = 4,7501$

▸ Segunda diferencia dividia centrada

$f''(1,3) = \frac{0,5989363373 - 2(0,59903) + 0,5991427187}{(0,002)^2} = 4,764$

½ $f'(1,3) = -0,051$