UNIVERSIDAD NACIONAL DE INGENIERÍA
FACULTAD DE CIENCIAS
ESCUELA PROFESIONAL DE MATEMÁTICA
Análisis de Modelamiento Numérico I

Ciclo 2020_01
Fecha: 09/09/2020
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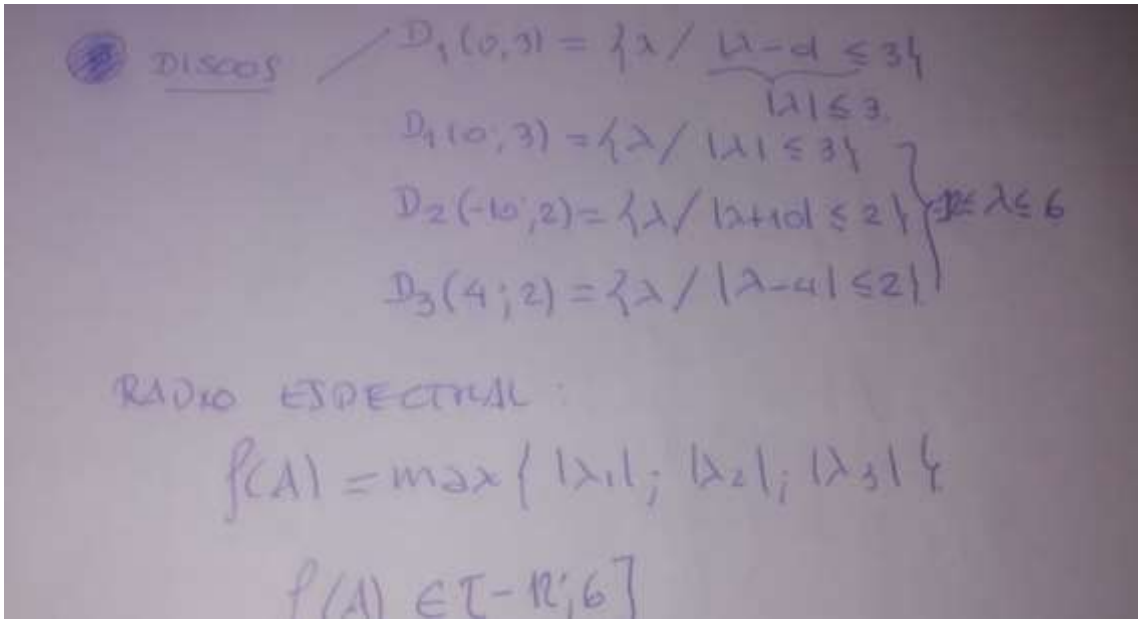
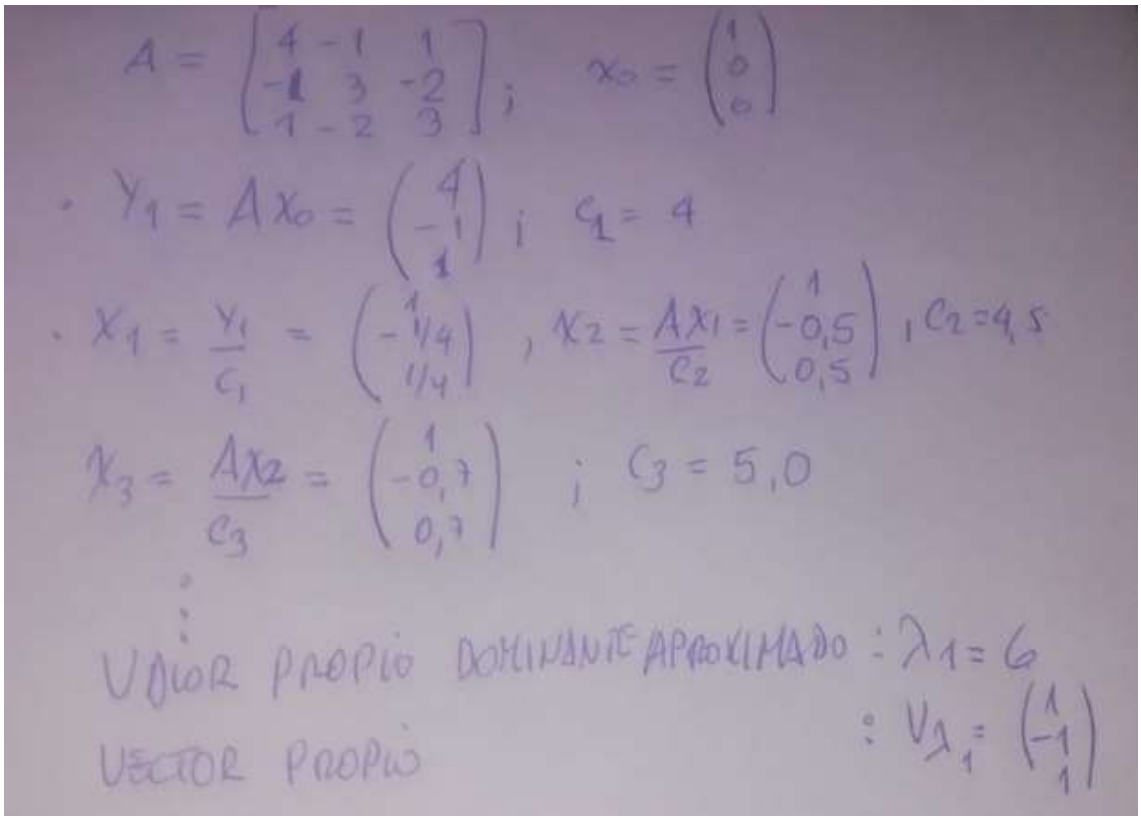
Solucionario de la Practica Calificada No.6

Problema 1



Problema 2



Problema 3

Let $P_m(x)$ be the polynomial that passes through

$$(x_0, f(x_0)), \ldots, (x_m, f(x_m)).$$

Then, the function

$$f(x) - P_m(x)$$

has $m+1$ zeros at $x_0, x_1, \ldots, x_m$. So,

$$f'(x) - P_m'(x)$$

has m zeros.

$$f''(x) - P_m''(x)$$

has $m-1$ zeros, and so on.

$$f^{(m)}(x) - P_m^{(m)}(x)$$

has one zero. Denote that zero by ξ.

$$f^{(m)}(\xi) = P_m^{(m)}(\xi)$$

$P_m(x)$ is a polynomial of order $\leq m$. Therefore,

$$P_m^{(m)}(x) = m! f[x_0, \ldots, x_m]$$

(Recall $f[x_0, \ldots, x_m]$ is the leading coefficient.) We get

$$f^{(m)}(\xi) = P_m^{(m)}(\xi) = m! f[x_0, \ldots, x_m].$$

Problema 4

Algoritmo 1

Determina las diferencias divididas de un grupo finito de datos

Algoritmo 2

Usando el algoritmo 2 determina el polinomio interpolador del grupo de datos

Problema 5