

PROGRAMA ELABORADO POR : ÑOL IVAN JUAN DE DIOS ROJAS (TJGO)

- Progama para la solución de sistemas de ecuaciones no lineales (SENL).

```
% Definición de variables.
```

```
clc;clear;close all;syms x;syms y;syms z;syms x1;syms x2;syms y1;syms y2;syms z1;syms z2;  
% =====
```

```
% Menu de ventana emergente.
```

```
text = {'Ingrese N° de ecuaciones: ', 'Cantidad de variable:', 'Valores iniciales, Entre espacios'}
```

```
dlgtitle = 'S.E.N.O. - NEWTON RHAPSON';
```

```
dimensions = [1 18; 1 50; 1 40; 1 29; 1 60];
```

```
default_input = { '3', '3', '0.1 0.1 -0.1', '10^-8', '10' };
```

```
answer = inputdlg(text,dlgtitle,dimensions,default_input);
```

```
num_equ=str2num(answer{1})
```

```
num_equ = 3
```

```
num_var=str2num(answer{3})
```

```
num_var = 1×3  
    0.1000    0.1000   -0.1000
```

```
equs={'1'};diff_equs=["-", "-"];  
% =====
```

```
symss={'y'; 'y'; 'z'};
```

```
matrixx=str2sym(symss);
```

```
for i=1:1:num_equ
```

```
    i_equ = num2str(i);
```

```
    text_equ = {i_equ};
```

```
    dlgtitle_equs = 'INGRESE LA ECUACIÓN N°';
```

```
    dimensions_equs = [1 50];
```

```
    default_input_equs = { '0' };
```

```
    answer_equs = inputdlg(text_equ ,dlgtitle_equs,dimensions_equs,default_input_equs);
```

```
    equs{i}=answer_equs;
```

```
    diff_equs(i)=string(equs{i});
```

```
    matrixx(i)=eval(diff_equs(i)');
```

```
end
```

```
matrixx
```

```
matrixx =
```

$$\begin{pmatrix} 3x - \cos(yz) - \frac{1}{2} \\ \sin(z) - 81 \left(y + \frac{1}{10}\right)^2 + x^2 + \frac{53}{50} \\ 20z + e^{-xy} + \frac{5332248173269055}{562949953421312} \end{pmatrix}$$

```
matrixxx = jacobian(matrixx)
```

matrixxx =

$$\begin{pmatrix} 3 & z \sin(yz) & y \sin(yz) \\ 2x & -162y - \frac{81}{5} & \cos(z) \\ -ye^{-xy} & -xe^{-xy} & 20 \end{pmatrix}$$

```
k=1;
if(length(num_var)==3)
    a=[1 2 3];
    b=[1 2 3];
    printt=[a;b];
    x=num_var(1);
    y=num_var(2);
    z=num_var(3);
    while(k<=str2double(answer{5}))
        mm=eval(matrixxx);
        nn=eval(matrixx);
        kk=(mm^-1)*nn;
        hh=num_var'-kk;
        printt(k,:)=(hh');
        Valores_x=printt(:,1);
        Valores_y=printt(:,2);
        Valores_z=printt(:,3);
        export_dates=[Valores_x,Valores_y,Valores_z];
        if(norm(hh)<=str2num(answer{4}))
            disp(hh);
            break;
        end
        x=hh(1);
        y=hh(2);
        z=hh(3);
        num_var=hh';
        k=k+1;
    end
end
dates_table=table(Valores_x,Valores_y,Valores_z)
```

dates_table = 10×3 table

	Valores_x	Valores_y	Valores_z
1	0.4999	0.0195	-0.5215
2	0.5000	0.0016	-0.5236
3	0.5000	0	-0.5236
4	0.5000	0	-0.5236
5	0.5000	-0	-0.5236
6	0.5000	0	-0.5236
7	0.5000	-0	-0.5236

	Valores_x	Valores_y	Valores_z
8	0.5000	0	-0.5236
9	0.5000	-0	-0.5236
10	0.5000	0	-0.5236

```
xlswrite('RESULTADOS.xlsx',export_dates);
```