METODO DE NEWTON Y JOSEPH RAPHSON

```
clc, clear;
format long g;
syms x;
```

APROXIMACIÓN INICIAL

```
p_0 = 4;
```

INGRESAR LA TOLERACIA:

```
Tol     = 0.0001;
```

INGRESAR EL NUMERO DE ITERACIONES:

```
Num_it  = 30;
```

INGRESAR LA ECUACÍON x=g(x):

RECORDANDO QUE ΔPSI = P0-Pt

$$Log\,W_{18} = Z_R * S_o + 9.36 * Log(SN+1) - 0.20 + Log\left(\frac{\Delta PSI}{4.2-1.5}\right)\Big/\left[0.40 + \left(\frac{1094}{(SN+1)^{5.19}}\right)\right] + 2.30 * LogM_r$$

```
f_x= 0.45*0.9+9.36*log10(x+1)-0.2+ ( (log10(3.5/(4.2-1.5)))/ (0.4+ 1094/(x+1)^5.19) )+2.32*log1
```

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```
df_x= diff(f_x)
```

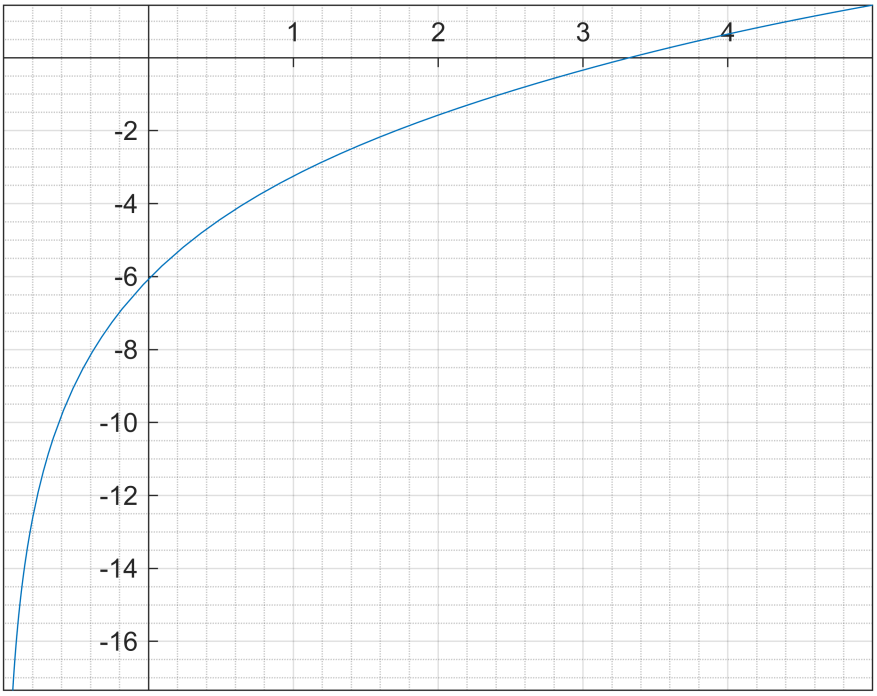
df_x =

$$\frac{234}{25\log(10)\,(x+1)} + \frac{2305551623892734709141}{3602879701896396800\,(x+1)^{619/100}\left(\frac{1094}{(x+1)^{519/100}}+\frac{2}{5}\right)^2}$$

```
n=[1 2];
x_0=[1 2];
g_x=[1 2];
error_=[0 2];

fplot(f_x);
hold on;
hold off;
grid on;
```

```
grid minor;
ax = gca;
ax.XAxisLocation = 'origin';
ax.YAxisLocation = 'origin';
```




```
f= @(x) eval(f_x);
g= @(x) eval(df_x);
i=1;

while(i <= Num_it)
    p=p_0-(f(p_0)/g(p_0));

    n(i)=i;
    x_0(i)= p_0;
    g_x(i)= p;
    error_(i)= p-p_0;

     if((f(p_0)==0) || (abs(p-p_0)<Tol))
        disp(p);
        break;
     else
        p_0=p;
    end
     i=i+1;
end
```

```
    3.32089527345312
```

```
n;
```