%integracion por cuadratura gaussiana

disp('Métodos de integración por cuadratura gaussiana')

f = @(x) exp(-1./x)./(1+x.^2);

format long

a=0;

b=1/9;

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

A2=1/3\*[-sqrt(3),sqrt(3)];

W2=[1 1];

quad1 = gauss (f, a, b, A2, W2);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 2 nodos')

disp(['I=',num2str(quad1,10)])

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

A3=1/5\*[-sqrt(15),0,sqrt(15)];

W3=1/9\*[5 8 5];

quad1 = gauss (f, a, b, A3, W3);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 3 nodos')

disp(['I=',num2str(quad1,10)])

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

A4=1/35\*[-sqrt(525+70\*sqrt(30)),-sqrt(525-70\*sqrt(30)),sqrt(525-70\*sqrt(30)),sqrt(525+70\*sqrt(30))];

W4=1/36\*[18-sqrt(30),18+sqrt(30),18+sqrt(30),18-sqrt(30)];

quad1 = gauss (f, a, b, A4, W4);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 4 nodos')

disp(['I=',num2str(quad1,10)])

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

>> InregracionCuadratGaussDic2021

Métodos de integración por cuadratura gaussiana

-------------------------------------------

integral aproximada, cuadratura gaussiana con 2 nodos

I=6.101480085e-07

-------------------------------------------

integral aproximada, cuadratura gaussiana con 3 nodos

I=1.203402184e-06

-------------------------------------------

integral aproximada, cuadratura gaussiana con 4 nodos

I=1.258474214e-06

%integracion por cuadratura gaussiana

disp('Métodos de integración por cuadratura gaussiana')

f = @(x) exp(-1./x)./(1+x.^2);

format long

a=0;

b=1/9;

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

[quad, raices, nodos, coefs] = GaussLegendre( f, a, b, 2);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 2 nodos')

disp(['I=',num2str(quad,10)])

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

[quad, raices, nodos, coefs] = GaussLegendre( f, a, b, 3);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 3 nodos')

disp(['I=',num2str(quad,10)])

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

[quad, raices, nodos, coefs] = GaussLegendre( f, a, b, 4);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 4 nodos')

disp(['I=',num2str(quad,10)])

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

[quad, raices, nodos, coefs] = GaussLegendre( f, a, b, 5);

disp('-------------------------------------------')

disp('integral aproximada, cuadratura gaussiana con 5 nodos')

disp(['I=',num2str(quad,10)])

>> InregracionCuadratGaussDic2021B

Métodos de integración por cuadratura gaussiana

-------------------------------------------

integral aproximada, cuadratura gaussiana con 2 nodos

I=6.101480085e-07

-------------------------------------------

integral aproximada, cuadratura gaussiana con 3 nodos

I=1.203402184e-06

-------------------------------------------

integral aproximada, cuadratura gaussiana con 4 nodos

I=1.258474214e-06

-------------------------------------------

integral aproximada, cuadratura gaussiana con 5 nodos

I=1.250928448e-06

>>

%%%%%%%%%%%%%%%%%%%%%%%

g = @(x) exp(-x)./(1+x.^2);

s = simprl (g, 0, 9, 160);

s+quad

%%%%%%%%%%%%%%%%%%%%%%%

q = integral(g,0,Inf)