function final\_R = rombergIntegration(f,a,b,n,epsilon)

%Romberg Integration approximation of the integral

%given endpoints a and b and integer n >0 and function f

%output an array

h = b-a;

R = zeros(n);

final\_R = zeros(n);

final\_R(1,1) = h/2\*(f(a) + f(b));

i = 2;

%for i=2:n originally had this for when I did the book implementation with

%the n as a parameter

% n = 2;

trap\_sum = 0;

%while abs(R(n-1,n-1)-R(n,n)) > epsilon %stopping criteria

for i=2:n

for k=1:2^(i-2)

trap\_sum = trap\_sum+ f(a+(k-0.5)\*h);

end

R(2,1) = .5\*R(1,1) + .5\*h\*trap\_sum;

trap\_sum = 0;

for j=2:i

R(2,j) = R(2,j-1) + (R(2,j-1) - R(1,j-1))/(4^(j-1) - 1);

% final\_R(i,j) = R(2,j);

end

final\_R(i,:) = R(2,:);

h=h/2;

if(abs(R(1,i)-R(2,i)) < epsilon)

break

end

for j=1:i

R(1,j) = R(2,j);

end

% n = n+1;

% i = i+1;

end

end

I made this below output with format long

A close up of a piece of paper

Description automatically generated