function I = trapezoidal\_method(f, a, b, n)

% f is the function to integrate

% a and b are the limits of integration

% n is the number of subintervals

% I is the estimated integral

% Step size

h = (b - a) / n;

% Evaluate the function at the endpoints

sum = f(a) + f(b);

% Evaluate the function at the intermediate points and sum them up

for i = 1:n-1

sum = sum + 2 \* f(a + i \* h);

end

% Multiply by the step size and divide by 2

I = (h / 2) \* sum;

end