```
% Question 2

clc; close all;

n = 10;
h = 1/(n+1);
tri = full(gallery('tridiag',n,1,-2,1));

func = @(x) (4*pi)^2*cos(4*pi*x)*h^2;

f = [];
x = [];

for i=1:n
    x(i) = h*i;
    f(i) = func(x(i));
end
f(n) = f(n) - 2;
f(1) = 0;
x = [0 x 1];
x = x';
u = tri\f';
u = [0;u;2];

ax = solutionAN10000(:,1);
ay = solutionAN10000(:,2);

figure
plot(x,u);
hold on
plot(ax,ay)
title('U vs. x')
legend('U','Exact')
xlim([0 1])
xlabel('x')
ylabel('U')

fid = fopen('q2data.txt','w');
fprintf(fid, '\tx\t\t\tu\n');
fprintf(fid,'%f\t%f\n',[x,u].');
```