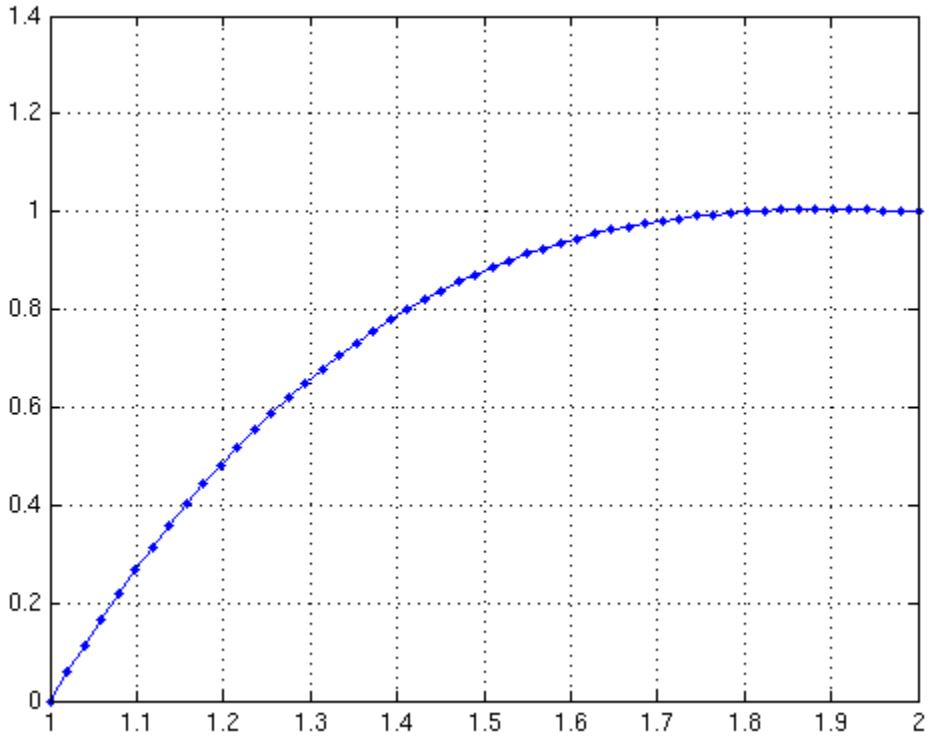
```
clear all, close all

% parametrar
a = 1;
b = 2;
N = 50;
g = @(x) 2-x+x.^2;

% diskretisera intervallet
h = (b-a)/(N+1);
x = a + h*(0:(N+1));
assert( abs(b-x(end))<eps ) % avbryt om inte konsistent!

% koefficienterna
x_j = x(2:end-1)';
alpha_j = (1/h^2 - g(x_j)/(2*h));
beta = -2/h^2 + 1;
gamma_j = (1/h^2 + g(x_j)/(2*h));

% matris med diagonalerna, shiftade cf. konventionen i spdiags
e = ones(N,1);
d = [circshift(alpha_j,-1) beta*e circshift(gamma_j,1)]; %

% systemet
A = spdiags(d, [-1 0 1], N, N);
b = zeros(N,1);
b(N) = -gamma_j(N); % randvillkoret!

% lsg
yj = A\b;
y = [0; yj; 1]; % addera randpunkterna
figure()
plot(x,y,'.-'), grid on
```



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