```
clear, clc;
close all;

bm = [-5,-1;-2,-5];
cm = [1,0;0,1];
am = [2,0;0,2];
n = 4;
a = cell(n,1);
b = cell(n,1);
c = cell(n,1);
d = {[-5;-6];[-3;-4];[-3;-4];[-4;-5]};

for i = 1:n
    a{i} = am;
    b{i} = bm;
    c{i} = cm;
end

z = btrid(a,b,c,d,n);
celldisp(z)

% 2x2 inverse function
% function to find the inverse of 2x2 matrix
function in = invert(m)
    determ = (m(1,1).*m(2,2))-(m(1,2).*m(2,1));
    rearrange = [m(2,2), -1.*m(1,2); -1.*m(2,1), m(1,1)];
    in = (1/determ).*rearrange;
end

function y = btrid(a,b,c,d,n)

    %initialize first row
    bbar{1} = b{1};
    cbar{1} = c{1};
    dbar{1} = d{1};

    %downward elimination
    for i = 2:n
        multiplier = a{i}*invert(bbar{i-1});
        abar{i} = a{i} - multiplier*bbar{i-1};
        bbar{i} = b{i} - multiplier*cbar{i-1};
        cbar{i} = c{i};
        dbar{i} = d{i} - multiplier*dbar{i-1};
    end

    %initialize cell array with matrix of size 2x2
    y = cell(n,1);
    for i = 1:n
        y{i} = [1;1];
    end

    %initilize end condition for upward substitution
```

```
    y{n} = invert(bbar{n})*dbar{n};

    %upward substitution
    for i = n-1:1
        y{i} = invert(cbar{i})*(dbar{i}-(bbar{i}*y{i+1}));
    end
end
```

```
z{1} =

     1
     1



z{2} =

     1
     1



z{3} =

     1
     1



z{4} =

    1.0000
    1.0000
```

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