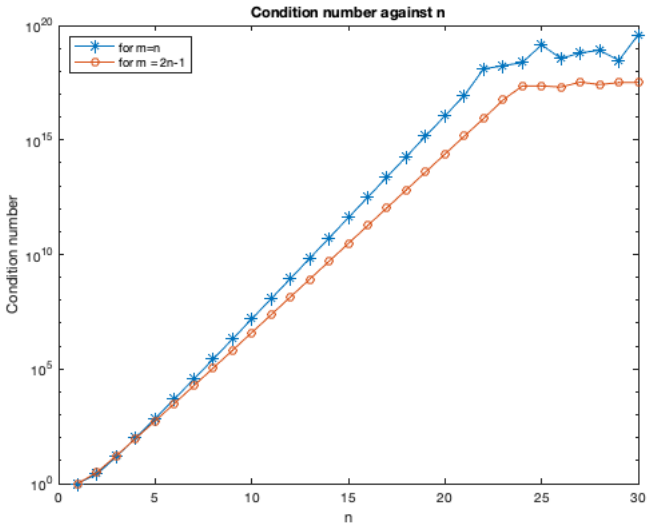
```
clear all;
close all;

%Condition of the Vandermonde system.
%Experiment1
n1 = [1:30]';
C = zeros(30,1);
C(1) = 1; %Condition number of A is 1 when n=1
for n = 2:30
    m = n;
    A = vandermonde(m,n);
    C(n) = cond(A);
end

%Experiment2
C2 = zeros(30,1);
C2(1) = 1; %Condition number of A is 1 when n=1
for n = 2:30
    m = 2*n - 1;
    A = vandermonde(m,n);
    C2(n) = cond(A);
end

%plot of the two-norm condition number of A
semilogy(n1,C,'-*')
hold on

semilogy(n1,C2,'-o')
title('Condition number against n');
xlabel('n');ylabel('Condition number');
legend('for m=n', 'for m = 2n-1','Location','northwest');

fprintf('For m = n, A is a square matrix, and gives large condtion numbers as n increases, compared to when \n m=2n-1. Hence the dimension of the matr

function A = vandermonde(m,n)

    t = zeros(m,n);
    for i = 1:n
        for j = 1:m
            t(j,i) = ((j-1)/(m-1))^(n-i);
        end
    end

    %fliping the vandermonde matrix t to form A
    A = fliplr(t);

end
```

```
For m = n, A is a square matrix, and gives large condtion numbers as n increases, compared to when
 m=2n-1. Hence the dimension of the matrix affects the condition number.
```

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