```
%{
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1st draft: Sept 27, 2015
Last modified: Sept 27, 2015

Subject: Assignment2 Q6
 %}

clear all % Clear stored variables
clc % Clear the screen
close all % Close all previously created plots

%Assuming the initial values of x and y (here x1 and x2)
x1 = 0;
x2 = 0;
x1x2 = [x1;x2];
% Defining a Jacobian matrix
Jn = zeros(2,2);
% Initial value of Iterations:
iter = 1;
% Setting a while loop for max no of iterations:
err = 10;

while err>(10^(-6))
    f1 = x1x2(2)-(x1x2(1)-1)^2;
    f2 = (x1x2(2)+4)^2 - tan(x1x2(1));
    F = [f1;f2];
    % Defining the Jacobian by manual calculations
    Jn(1,1) = -2*(x1x2(1)-1);
    Jn(1,2) = 1.0;
    Jn(2,1) = -(sec(x1x2(1))^2);
    Jn(2,2) = 2*(x1x2(2)+4);
    % Difference value of x and y
    dx = inv(Jn)*F;
    % Calculating the error
    err = F'*F;
    % Next values of x and y
    x1x2 = x1x2 - dx;
    %Displaying the iteration and the value of x and y
    disp(iter)
    disp('The value of x and y for the above mentioned iteration is')
    disp(x1x2)
    %Incrementing the value of iteration number
    iter = iter + 1;
end
disp('No of iterations required:')
disp(iter-1)
disp('Final value of x and y which satisfies the equations above:')
disp(x1x2)

% For plotting
x1 = linspace(0,10);
```

```
z = sqrt(tan(x1))-4;
x2 = (x1-1).^2;
figure
plot(x1,x2,'b', x1, z,'r');
xlabel('x')
ylabel('y')
```

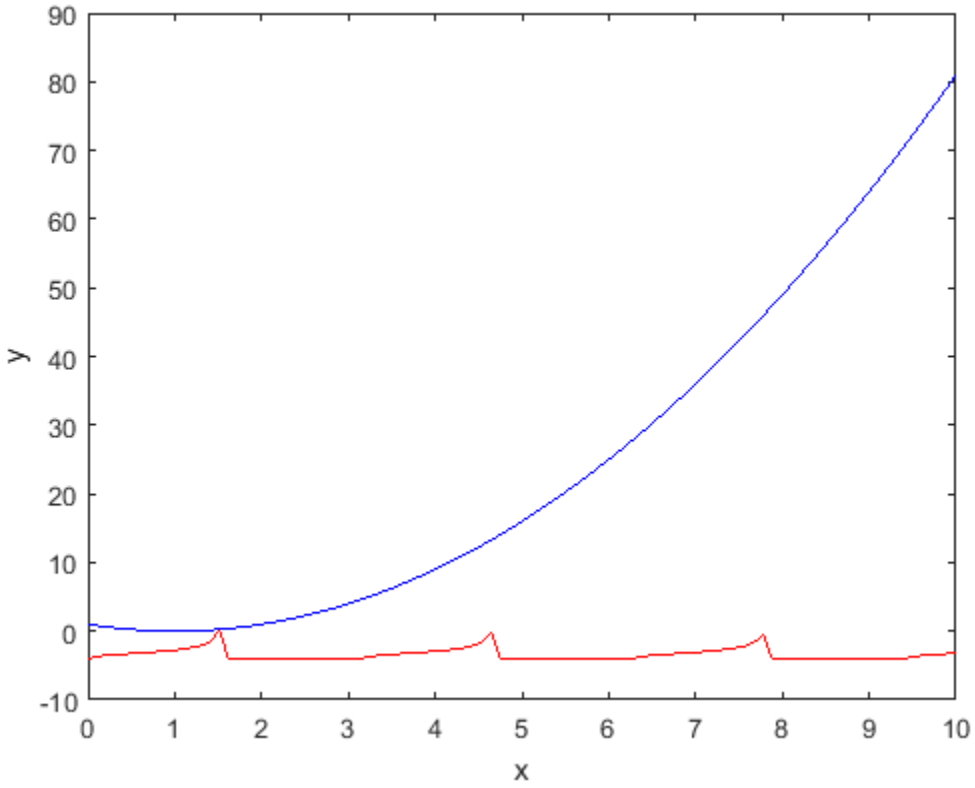
```
     1

The value of x and y for the above mentioned iteration is
    1.4118
   -1.8235

     2

The value of x and y for the above mentioned iteration is
    1.6096
    0.3324

     3

The value of x and y for the above mentioned iteration is
    1.6781
    0.4551

     4

The value of x and y for the above mentioned iteration is
    2.0662
    0.9861

     5

The value of x and y for the above mentioned iteration is
    0.3907
   -2.4360

     6

The value of x and y for the above mentioned iteration is
    2.5618
   -2.2745

     7

The value of x and y for the above mentioned iteration is
    0.4338
   -4.2081

     8

The value of x and y for the above mentioned iteration is
   -2.6664
    3.8315
```

```
     9

The value of x and y for the above mentioned iteration is
   -0.8462
    0.0956

    10

The value of x and y for the above mentioned iteration is
    0.5387
   -1.7053

    11

The value of x and y for the above mentioned iteration is
    2.9479
   -2.0099

    12

The value of x and y for the above mentioned iteration is
    1.0638
   -3.5458

    13

The value of x and y for the above mentioned iteration is
    1.4589
    0.0545

    14

The value of x and y for the above mentioned iteration is
    1.5798
    0.3216

    15

The value of x and y for the above mentioned iteration is
    1.5904
    0.3484

    16

The value of x and y for the above mentioned iteration is
    1.6173
    0.3803

    17

The value of x and y for the above mentioned iteration is
    1.7072
    0.4920
```

```
    18

The value of x and y for the above mentioned iteration is
    2.3728
    1.4415

    19

The value of x and y for the above mentioned iteration is
    1.1060
   -1.5935

    20

The value of x and y for the above mentioned iteration is
    4.0177
    0.6285

    21

The value of x and y for the above mentioned iteration is
    2.1703
   -2.0431

    22

The value of x and y for the above mentioned iteration is
   -0.9276
   -5.8815

    23

The value of x and y for the above mentioned iteration is
    1.7363
   -6.5543

    24

The value of x and y for the above mentioned iteration is
    1.2012
   -0.2459

    25

The value of x and y for the above mentioned iteration is
    4.1448
    1.2248

    26

The value of x and y for the above mentioned iteration is
    2.2773
   -1.8558
```

```
    27

The value of x and y for the above mentioned iteration is
   -0.1373
   -4.5371

    28

The value of x and y for the above mentioned iteration is
    3.9606
   -8.0278

    29

The value of x and y for the above mentioned iteration is
    1.5505
   -5.5053

    30

The value of x and y for the above mentioned iteration is
    1.5240
    0.2739

    31

The value of x and y for the above mentioned iteration is
    1.5171
    0.2674

    32

The value of x and y for the above mentioned iteration is
    1.5159
    0.2662

    33

The value of x and y for the above mentioned iteration is
    1.5159
    0.2662

    34

The value of x and y for the above mentioned iteration is
    1.5159
    0.2662

No of iterations required:
    34

Final value of x and y which satisfies the equations above:
    1.5159
```

```
    0.2662

Warning: Imaginary parts of complex X and/or Y arguments
ignored
```



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