C.1 Solve for the unknowns x and y in the following nonlinear equations using Taylor's theorem. (Use $x_0 = 5$ and $y_0 = 5$ for initial approximations).

$x^2y - 3x^2 = 75$

$x^2 - y = 19$

This information comes from the Editor's window.

```
x0=5
y0=5
 for i=1:5
J=[2*x0*y0-6*x0 x0^2 ; 2*x0 -1]
K= [75-(x0^2*y0-3*x0^2) ; 19-(x0^2-y0)]

X=inv(J)*K
dx=X(1)
dy=X(2)
x0=x0+dy
y0=y0+dy
disp([x0 y0])
end
```

This is the result coming from the Command Window

```
>> Homework_2_data_analysis

x0 =

     5


y0 =

     5


J =

    20    25
    10    -1


K =
```

25

-1

X =

0.0000

1.0000

dx =

1.3878e-16

dy =

1.0000

x0 =

6

y0 =

6

6 6

J =

36 36

12 -1

K =

-33

-11

X =

-0.9167

0.0000

dx =

-0.9167

dy =

5.5511e-17

x0 =

6

y0 =

6

6 6

J =

```
    36    36
    12    -1
```

K =

```
   -33
   -11
```

X =

```
   -0.9167
    0.0000
```

dx =

```
   -0.9167
```

dy =

```
   5.5511e-17
```

x0 =

6

y0 =

6

6 6

J =

36 36

12 -1

K =

-33

-11

X =

-0.9167

0.0000

dx =

-0.9167

dy =

5.5511e-17

x0 =

6

y0 =

6

6 6

J =

36 36

12 -1

K =

-33

-11

X =

-0.9167

0.0000

dx =

-0.9167

```
dy =

    5.5511e-17


x0 =

     6


y0 =

     6

     6     6

>>
```