In [1]:
```
import numpy as np
import pandas as pd
```

In [10]:
```
df = pd.DataFrame(columns=['x1','x2','x3'])
c = np.array([[83,11,-4,95],[7,52,13,104],[3,8,29,71]])
x = np.ones(3)
x = np.zeros(len(c))
for k in range(0, 10):
    for i in range(0,len(c)):
        y = 0
        for j in range(0,len(c)):
            if i != j:
                y = y + (c[i][j] * x[j])
        y = c[i][len(c)] - y
        x[i] = y / c[i][i]
    df.loc[k+1] = [x[0],x[1],x[2]]

round(df,4)
```

Out[10]:

	x1	x2	x3
1	1.1446	1.8459	1.8207
2	0.9877	1.4119	1.9566
3	1.0518	1.3693	1.9617
4	1.0577	1.3672	1.9617
5	1.0579	1.3672	1.9617
6	1.0579	1.3672	1.9617
7	1.0579	1.3672	1.9617
8	1.0579	1.3672	1.9617
9	1.0579	1.3672	1.9617
10	1.0579	1.3672	1.9617

Equation 02

In [11]:
```
df = pd.DataFrame(columns=['x1','x2','x3'])
c = np.array([[8,-3,2,45],[4,11,-1,71],[6,3,12,35]])
x = np.ones(3)
x = np.zeros(len(c))
for k in range(0, 10):
    for i in range(0,len(c)):
        y = 0
        for j in range(0,len(c)):
            if i != j:
                y = y + (c[i][j] * x[j])
        y = c[i][len(c)] - y
        x[i] = y / c[i][i]
    df.loc[k+1] = [x[0],x[1],x[2]]

round(df,4)
```

Out[11]:

	x1	x2	x3
1	5.6250	4.4091	-0.9981
2	7.5279	3.6264	-1.7539
3	7.4234	3.5957	-1.6939
4	7.3969	3.6108	-1.6845
5	7.4002	3.6104	-1.6860
6	7.4004	3.6102	-1.6861
7	7.4004	3.6102	-1.6861
8	7.4004	3.6102	-1.6861
9	7.4004	3.6102	-1.6861
10	7.4004	3.6102	-1.6861

Answers:

In [ ]:
```
ans:                    Itration:
    x  1.0579                   3 to 4
    y  1.3672
    z  1.9617
```

In [ ]:
```
ans:                     Itration:
    x  7.4004                  5 to 6
    y  3.6102
    z -1.6861
```