In [4]:
```
import numpy as np
import matplotlib as plt
import pandas as pd
import sklearn
%matplotlib inline
```

In [5]:
```
f = open('data6.1.txt', 'r')
data = np.array([])
for s in f:
    data = np.append(data,
                     float(s))
f.close()
print data.shape
lamb = data[0]
data = data[1:]
t0 = 1
t = 60
```

```
(16,)
```

λ – первая строчка файла,
остальное – t_i

$t_0 = 1;$
$t = 60;$
$lambda = 0.362;$
t_i :

In [6]:
```
datapd = pd.DataFrame(data)
datapd.columns = ['time']
datapd
```

Out[6]:

	time
0	3.367
1	10.144
2	13.410
3	14.602
4	22.952
5	23.522
6	28.854
7	40.808
8	41.484
9	43.059
10	43.787
11	44.818
12	45.857
13	52.092
14	56.937

$$N_t - N_s \sim Pois(\lambda \cdot (t-s))$$

$$E(N_t - N_s) = \lambda \cdot (t-s)$$

$$N_t - N_s \text{ независима с } N_s \rightarrow$$
$$E(N_t - N_s | N_s) = E(N_t - N_s)$$

$$E(N_t | N_s) = E(N_t - N_s | N_s) + E(N_s | N_s)$$
$$= \lambda \cdot (t-s) + N_s$$

In [7]:
```
Ns = []
for s in np.arange(t0, t+2):
    Ns.append(
        len(datapd[datapd['time'] <= s])
    )
```

In [14]:
```
Es = []

for s, ns in enumerate(Ns):
    Es.append(
        lamb * (t - s) + Ns[s]
    )

print "time, E(N_t|N_time*t0)"
pd.set_option('display.max_rows',
              100)
EsPD = pd.DataFrame(Es)
EsPD.columns = ['E(N_t|N_s)']
EsPD
```

```
time, E(N_t|N_time*t0)
```

Out[14]:

	E(N_t|N_s)
0	21.720
1	21.358
2	20.996
3	21.634
4	21.272
5	20.910
6	20.548
7	20.186
8	19.824
9	19.462
10	20.100
11	19.738
12	19.376
13	20.014
14	20.652
15	20.290
16	19.928
17	19.566
18	19.204
19	18.842
20	18.480

21	18.118
22	18.756
23	19.394
24	19.032
25	18.670
26	18.308
27	17.946
28	18.584
29	18.222
30	17.860
31	17.498
32	17.136
33	16.774
34	16.412
35	16.050
36	15.688
37	15.326
38	14.964
39	14.602
40	15.240
41	15.878
42	15.516
43	17.154
44	17.792
45	18.430
46	18.068
47	17.706
48	17.344
49	16.982
50	16.620
51	16.258

52	16.896
53	16.534
54	16.172
55	15.810
56	16.448
57	16.086
58	15.724
59	15.362
60	15.000

In [ ]: