In [12]:

```
# Consider the predator-prey system of equations
# x - fish, y - fishing boats
# dx/dt=x(2-y-x)
# dy/dt=-y(1-1.5x)

import matplotlib.animation as animation
from scipy.integrate import odeint
from numpy import arange
from pylab import *

def BoatFishSystem(state, t):
    fish, boat = state
    d_fish = fish * (2 - boat - fish)
    d_boat = -boat * (1 - 1.5 * fish)
    return [d_fish, d_boat]

t = arange(0, 20, 0.1)
init_state = [1, 1]
state = odeint(BoatFishSystem, init_state, t)

xlabel('number of fish')
ylabel('number of boats')
plot(state[:, 0], state[:, 1], 'b-')
show()

# dx/dt=0 => y=2-x
# dy/dt=0 => x=2/3
```