Perceptron

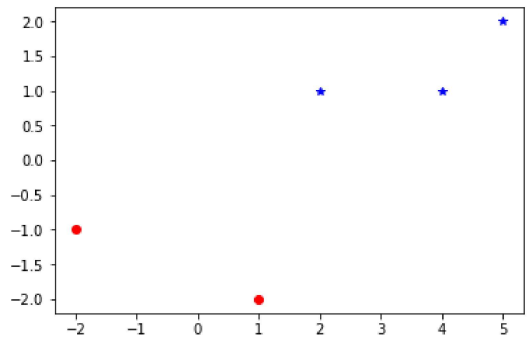
1. Perceptron computation

$v = Wx + b$

$y = \phi(v)$

Activation function: $y = \begin{cases} 0 & \text{for } v < 0 \\ 1 & \text{for } v > 0 \end{cases}$

In [4]:
```
import numpy as np
def hardlim(v):
    if v < 0:
        y = 0
    else:
        y = 1
    return y
```

In [12]:
```
import numpy as np
import matplotlib.pyplot as plt

x = np.array([[2, 5, -2, 1, 4],
              [1, 2, -1, -2, 1 ]])

#plt.plot(x[0,:],x[1,:],'*')

y = np.zeros(5)
#d = np.array([1,1,0,1])

#
for i in range(5):
    W = np.array([0.3, 0.3])
    b = -0.4
    v = np.dot(W,x[:,i])+b
    y[i] = hardlim(v)

    if y[i]>0:
        plt.plot(x[0,i],x[1,i],'*b')
    else:
        plt.plot(x[0,i],x[1,i],'or')

#
print(y)
#
#e=d-y
#
#plt.plot(x[0,:],x[1,:],'*')
```

```
[1. 1. 0. 0. 1.]
```