```
def func(x):
    return np.sin(x)

a=0
b=0.5*np.pi

for i in range(0,10):
    n=2**i

    h=(b-a)/float(n)
    tmp = 0.5*(func(a)+func(b))
    for j in range(1,n):
        x= a + j*h
        tmp += func(x)
    tmp=tmp*h
    err = 1.-tmp
    print ("n={:3d}   sum={:.10f}   err={:e}".format(n,tmp,err))
```