

例 2.1 线性规划问题

修改参数: c:目标函数系数

A_ub,B_ub:不等式约束系数

A_eq,B_eq:等式约束系数

bounds:变量约束范围

"""

```
import numpy as np
from scipy import optimize as op
import matplotlib.pyplot as plt

x = np.linspace(0.0, 16.0, 100)
y1 = (60 - 4 * x) / 6
y2 = 0 * x + 8
y3 = 0 * x + 0
plt.axvline(x=9)

plt.plot(x, y1, label=r'$4x_1+6x_2=60$')
plt.plot(x, y2, label=r'$x_2=8$')

plt.xlim((0.0, 16.0))
plt.ylim((0.0, 10.0))
plt.xlabel(r'$x_1$')
plt.ylabel(r'$x_2$')

y5 = np.minimum(y2, y1)
plt.fill_between(x, y5, y3, where=(y5 > y3) & (x < 9.0), color='grey', alpha=0.5)

plt.grid(True, linestyle='-.')

plt.legend()
plt.show()

def LP_maximize():
    res = op.linprog(-c, A_ub, B_ub, A_eq, B_eq, bounds=(x1, x2))
    print(res.x)
    print(-res.fun)

if __name__ == '__main__':
    c = np.array([12, 18])
    A_ub = np.array([[4, 6]])
    B_ub = np.array([60])
```

A_eq = None

B_eq = None

x1 = (0, 9)

x2 = (0, 8)

LP_maximize()