Листинг:

import shutil

import sys

import os.path

import pyomo.environ as pyo

from pyomo.environ import ConcreteModel, Var, NonNegativeReals, Objective, maximize, minimize, Constraint

from pyomo.opt import SolverFactory

import matplotlib.pyplot as plt

import numpy as np

a = 4

b = 5

a1 = 4

a2 = 2

a3 = 1

b1 = 4

b2 = 2

b3 = 1

n1 = 8

n2 = 8

n3 = 18

model = pyo.ConcreteModel()

model.x = Var(domain=NonNegativeReals)

model.y = Var(domain=NonNegativeReals)

model.profit = Objective(

expr = a\*model.x + b\*model.y,

sense = minimize)

model.laborA = Constraint(expr = a1 \* model.x + b1 \* model.y <= n1)

model.laborB = Constraint(expr = a2 \* model.x + b2 \* model.y <= n2)

model.laborC = Constraint(expr = a3 \* model.x + b3 \* model.y >= n3)

fig, ax = plt.subplots(1, 1, figsize=(4, 4))

ax.set\_aspect('equal')

ax.axis([0, 8, 0, 20])

ax.set\_xlabel('X')

ax.set\_ylabel('Y')

x1 = np.array([0, 8])

ax.plot(x1, (n1 - a1\*x1) / b1, 'r', lw=2)

ax.plot(x1, (n2 - a2\*x1) / b2, 'g', lw=2)

ax.plot(x1, (n3 - a3\*x1) / b3, 'b', lw=2)

ax.fill\_between([0, 0, 2], [0, 0, 0], [0, 2, 0], color='r', alpha=0.10)

ax.fill\_between([0, 0, 4], [2, 4, 0], [2, 0, 0], color='g', alpha=0.10)

ax.fill\_between([0, 0, 8], [0, 20, 20], [0, 18, 10], color='b', alpha=0.10)

plt.savefig(fname='plot', bbox\_inches='tight')

Результат:

