1.- The equations that follows are material balances for CO_2, SO_2, and N_2 around a gas absorber. F is treated as a known variable, but it depends on the case of study.

Solve the material balances for the unknown flow rates S_1, S_2, S_3 using matrices in Excel and use the procedure to find the solution for three different cases of study:

    a) $F = 0.0444$
    b) $F = 0.105$
    c) $F = 0.1422$

$$0.78938\ S_1 - 0.15\ S_2 - 0.79255\ S_3 = 0$$

$$-0.78938\ S_1 + 0\ S_2 + 0.79255\ S_3 = -0.1187F$$

$$0.20983\ S_1 - 0.85\ S_2 - 0.20665\ S_3 = 0$$