

4.4 The solutions of a system of simultaneous linear equations with two unknowns can be solved easily using Cramer's rule.

Assume that a system of equations is given as

$$ax + by = c \quad \text{and} \\ ex + ey = f$$

Then Cramer's rule states that if there is a solution (i.e. $a*e - b*d \neq 0$),

$$x = \frac{c*e - f*b}{a*e - d*b} \quad \text{and} \quad x = \frac{a*f - d*c}{a*e - d*b}$$

Write a programs which accepts the six input coefficients a, b, c, d, e and f and determines the solutions for x and y . If $a*e - b*d = 0$, print a message "The solutions are not unique or there exist no solution."

Sample running 1 :

This program finds the solution for the simultaneous linear equations :

$$a x + b y = c \\ d x + e y = f$$

Note that a and d cannot be both equal to zero
and b and e cannot be both equal to zero.

Please input the coefficients a, b and c : **1.0 2.0 3.0**<CR>

Please input the coefficients d, e and f : **4.0 5.0 6.0**<CR>

For the equations :

$$1.00 x + 2.00 y = 3.00 \\ 4.00 x + 5.00 y = 6.00$$

The solutions are :

$$x = -1.000 \\ y = 2.000$$

Sample running 2 :

This program finds the solution for the simultaneous linear equations :

$$a x + b y = c \\ d x + e y = f$$

Note that a and d cannot be both equal to zero
and b and e cannot be both equal to zero.

Please input the coefficients a, b and c : **1.0 2.0 3.0**<CR>

Please input the coefficients d, e and f : **2.0 4.0 5.0**<CR>

The solutions are not unique or there exist no solution.