

Chapter 9 / **Example 5****Solving equations with matrices**

Solve the systems of equations by first forming a matrix equation.

$$\text{a} \quad \begin{cases} 10x - 5y = 35 \\ -3x + 7y = 23 \end{cases} \quad \text{b} \quad \begin{cases} 4s - 3t - 2z = 0 \\ 2s + 2t + 3z = -6 \\ 6s + t - z = 2 \end{cases}$$

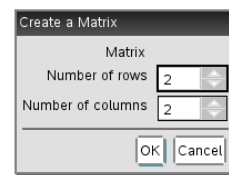
$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 10 & -5 \\ -3 & 7 \end{pmatrix}^{-1} \begin{pmatrix} 35 \\ 23 \end{pmatrix}.$$

Open a new document and add a Calculator page.

Press **menu** 7:Matrix & Vector | 1:Create | 1:Matrix.

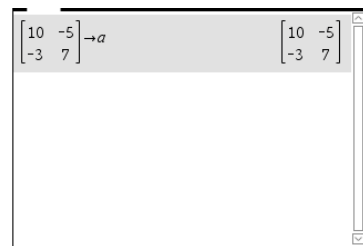
Change the number of rows and columns to 2.

Press **enter**.



Enter the values of the elements of the matrix **A**, using **tab** to move through the matrix.

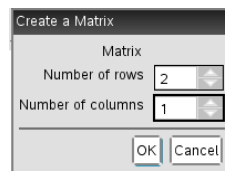
Press **ctrl** **var** **sto+>** A and press **enter**.



Press **menu** 7:Matrix & Vector | 1:Create | 1:Matrix.

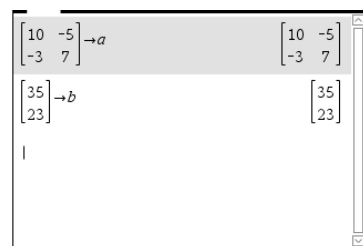
Change the number of rows to 2 and columns to 1.

Press **enter**.



Enter the values of the elements of the matrix **B**, using **tab** to move through the matrix.

Press **ctrl** **var** **sto+>** B and press **enter**.

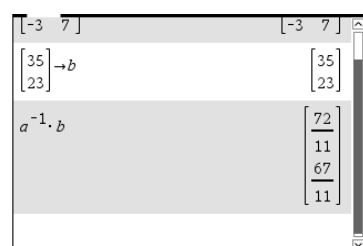


Type  $A^{-1} \times B$  and press **enter**.

To type  $^{-1}$  press **^** and type -1.

The GDC displays the result in fractional form.

$$x = \frac{72}{11} \text{ and } y = \frac{67}{11}.$$



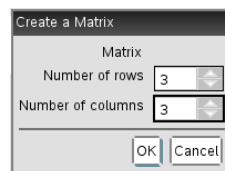
Chapter 9 / **Example 5**

# Solving equations with matrices

Press **menu** 7:Matrix & Vector | 1:Create | 1:Matrix.

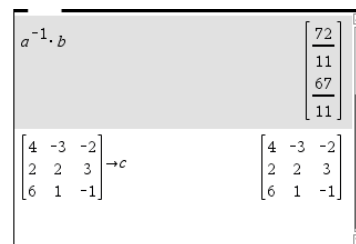
Change the number of rows and columns to 3.

Press **enter**.



Enter the values of the elements of the matrix **C**, using **tab** to move through the matrix.

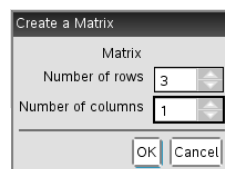
Press **ctrl** **var** **sto→** A and press **enter**.



Press **menu** 7:Matrix & Vector | 1:Create | 1:Matrix.

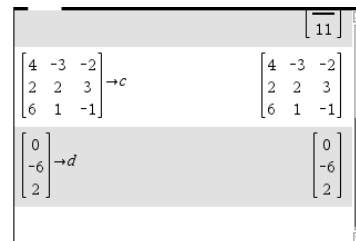
Change the number of rows to 3 and columns to 1.

Press **enter**.



Enter the values of the elements of the matrix **D**, using **tab** to move through the matrix.

Press **ctrl** **var** **sto→** D and press **enter**.



Type  $C^{-1} \times D$  and press **enter**.

To type  $^{-1}$  press **^** and type -1.

The GDC displays the result in fractional form.

$$s = -\frac{1}{3}, t = \frac{4}{3} \text{ and } z = -\frac{8}{3}.$$

