

## Chapter 9 / Example 4

# Inverse of a matrix

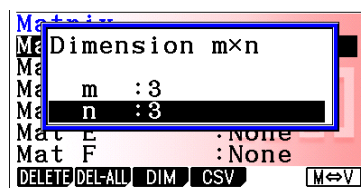
Use technology to determine the inverse of  $P = \begin{pmatrix} 4 & -3 & -2 \\ 2 & 2 & 3 \\ 6 & 1 & -1 \end{pmatrix}$ .

Verify that  $PP^{-1} = P^{-1}P = I_3$ .

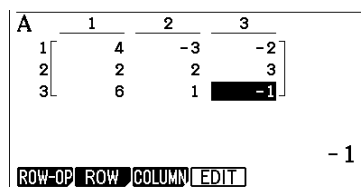
Press **MENU** 1 **RUN-MAT** to display the Run-Matrix screen for arithmetical calculations.

Press **F3** **MAT/VCT** **F3** **DIM**.

Change the dimensions of the matrix to  $3 \times 3$  and press **EXE**.



Enter the values of the elements of the matrix  $P$ , using **EXE** to move through the matrix.



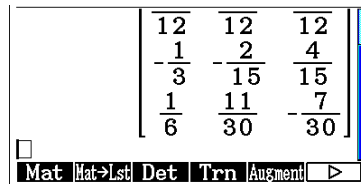
Press **EXIT** twice to return to the calculation screen.

Press **OPTN** **F2** **MAT/VCT** **F1** **Mat**.

Press **ALPHA** **X,θ,T** **[A]**.

Press **SHIFT** **)**  $[x^{-1}]$  and press **EXE**.

The GDC displays the matrix  $P^{-1}$  in fractional form.



Press **F1** **Mat**.

Press **ALPHA** **X,θ,T** **[A]**.

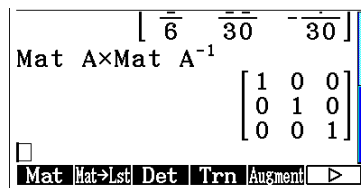
Press **×** **[format]**

Press **F1** **Mat**.

Press **ALPHA** **X,θ,T** **[A]**.

Press **SHIFT** **)**  $[x^{-1}]$  and press **EXE**.

$P \cdot P^{-1} = I$ .



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Press **F1** Mat.

Press **ALPHA** **X,θ,T** **[A]**.

Press **SHIFT** **)**  $[x^{-1}]$ .

Press **x** [format]

Press **F1** Mat.

Press **ALPHA** **X,θ,T** **[A]** and press **EXE**.

$$\mathbf{P}^{-1} \cdot \mathbf{P} = \mathbf{I}.$$

$$\text{Mat } A^{-1} \times \text{Mat } A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$