

Solve the system

$$5x + 7y + 12z = 134,000$$

$$2x + 3y + 5z = 56,000$$

$$x + y + z = 14,000$$

using the inverse matrix of the coefficient matrix

$$A = \begin{bmatrix} 5 & 7 & 12 \\ 2 & 3 & 5 \\ 1 & 1 & 1 \end{bmatrix}$$

and the constant matrix

$$B = \begin{bmatrix} 134,000 \\ 56,000 \\ 14,000 \end{bmatrix}$$

We'll calculate

$$X = A^{-1}B$$

to find the solution to the system of equations.

### Enter the matrices A and C

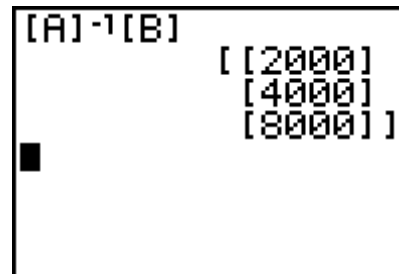
1. Press  $\boxed{2nd} \boxed{[x^{-1}]}$  to edit the matrix.
2. Move to the EDIT tab and select 1: [A].
3. Enter matrix A.
4. Repeat the process and enter matrix B.
5. Press  $\boxed{2nd} \boxed{MODE}$  to QUIT and return to the home screen.

```
MATRIX[A] 3 x 3
[ 5 7 12 ]
[ 2 3 5 ]
[ 1 1 1 ]
3, 3=1
```

```
MATRIX[B] 3 x 1
[ 134000 ]
[ 56000 ]
[ 140000 ]
3, 1=14000
```

**Find the product matrix of  $A^{-1}$  and B on the home screen**

6. Press  $\boxed{2nd}\boxed{x^{-1}}$  to enter the name of the matrix A.
7. Use the  $\boxed{x^{-1}}$  key to place the inverse sign after of matrix A as shown.  
Press  $\boxed{2nd}\boxed{x^{-1}}$  to enter the name of the matrix B. Note that you do not need to see the inverse matrix of A.
8. Press  $\boxed{ENTER}$  to see the product.



The image shows a calculator screen with the expression  $[A]^{-1}[B]$  on the left and the resulting matrix product on the right. The matrix product is displayed as a 3x1 column matrix with rows  $[2000]$ ,  $[4000]$ , and  $[8000]$ . A small black square cursor is visible on the left side of the screen.