

This example involves solving 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 Matrix A

1. In cell A1, type a label for the coefficient matrix.
1. Enter the values in the matrix in cells B1 through D3 as shown to the right.

	A	B	C	D
1	Matrix A	5	7	12
2		2	3	5
3		1	1	1
4				

Find the inverse of A

1. In cell A5, type a label for the inverse.
2. Click in B5 where you wish to see the resulting matrix. Drag the mouse to select the cells where you want the result to be placed.

4				
5	Inverse of A			
6				
7				
8				

3. In the function line at the top of the sheet, put =MINVERSE(B1:D3). To do this, type =MINVERSE(and highlight the range of cells that make up the matrix. To complete the command, type a).

	A	B	C	D
1	Matrix A	5	7	12
2		2	3	5
3		1	1	1
4				
5	Inverse of A	E(B1:D3)		
6				
7				

4. Press **CTRL+SHIFT+ENTER** on the keyboard to see the resulting matrix.

5	Inverse of A	2	-5	1
6		-3	7	1
7		1	-2	-1

5. In cell A9, type a label for the constant matrix.
6. Enter the values in the matrix in cells B9 through B11 as shown to the right.

9	Matrix C	134000
10		56000
11		14000

7. In cell A13, type a label for the solution.
8. Click in B13 where you wish to see the resulting matrix. Drag the mouse to select the cells where you want the result to be placed.

9	Matrix C	134000
10		56000
11		14000
12		
13	Solution X	
14		
15		

9. In the function line at the top of the sheet, put =MMULT(B5:D7, B9:B11). To do this, type the command =MMULT(and then highlight the range of cells that make up the first matrix, type a comma, then highlight the range of cells of the second matrix. A parenthesis) is needed to complete the command.

	A	B	C	D
1	Matrix A	5	7	12
2		2	3	5
3		1	1	1
4				
5	Inverse of A	2	-5	1
6		-3	7	1
7		1	-2	-1
8				
9	Matrix C	134000		
10		56000		
11		14000		
12				
13	Solution X	=MMULT(B5:D7,B9:B11)		
14				
15				
16				

10. Press **CTRL+SHIFT+ENTER** on the keyboard to see the resulting matrix.

12				
13	Solution X	2000		
14		4000		
15		8000		
16				