

Verifying Linear Solve Example with Maple

Include Linear Algebra package and set precision:

```
[ > with(linalg):  
Warning, new definition for norm  
Warning, new definition for trace  
[ > Digits := 16;  
  
Digits := 16
```

Set up test matrix ...

```
[ > A := matrix(3,3,  
[ [ 1.23, 0.24, -0.45] ,  
[-0.43, 2.45, 0.78] ,  
[ 0.51, -0.68, 3.23] ] );  
  
A :=  $\begin{bmatrix} 1.23 & .24 & -.45 \\ -.43 & 2.45 & .78 \\ .51 & -.68 & 3.23 \end{bmatrix}$ 
```

... and right-hand side vector:

```
[ > b := vector( [6.78, -3.45, 1.67] );  
  
b := [6.78, -3.45, 1.67]
```

Solve the system ...

```
[ > x := linsolve(A,b);  
  
x := [5.426364412431639, -.325775376817393, -.4083508069894620]
```

... and check that the solution satisfies the original equations:

```
[ > bcheck := multiply(A,x);  
  
bcheck := [6.780000000000000, -3.449999999999998, 1.670000000000001]  
  
[ > evalm(b - bcheck);  
  
[0, -2 10-14, -.1 10-14]
```