1.4

```
A = [1,2;3,4]
```

```
A =
       1             2
       3             4
```

```
L = [1,0;3,1]
```

```
L =
       1             0
       3             1
```

```
U = [1,2;0,-2]
```

```
U =
       1             2
       0            -2
```

```
L*U
```

```
ans =
       1             2
       3             4
```

```
A = [2,3,3;0,5,7;6,9,8]
```

```
A =
       2             3             3
       0             5             7
       6             9             8
```

```
E31 = [1,0,0;0,1,0;-3,0,1]
```

```
E31 =
       1             0             0
       0             1             0
      -3             0             1
```

```
L = E31^-1
```

```
L =
       1             0             0
       0             1             0
       3             0             1
```

```
U = E31*A
```

```
U =
       2             3             3
       0             5             7
       0             0            -1
```

```
c = L^-1*[2;2;5]
```

```
c =
       2
       2
      -1
```

P27

```
clear
A = [1,0,0;2,1,0;-1,-3,1]*[2,1,1;0,-1,-2;0,0,-4]
```

```
A =
       2             1             1
       4             1             0
      -2             2             1
```

```
L = [1,0,0;2,1,0;-1,-3,1]
```

```
L =
       1             0             0
       2             1             0
      -1            -3             1
```

```
U = [1,1/2,1/2;0,1,2;0,0,1]
```

```
U =
       1            1/2           1/2
       0             1             2
       0             0             1
```

```
D = [2,0,0;0,-1,0;0,0,-4]
```

```
D =
       2             0             0
       0            -1             0
       0             0            -4
```

```
L*D*U
```

```
ans =
       2             1             1
       4             1             0
      -2             2             1
```

1.4.5

```
clear
A = [2,-1,0;-1,2,-1;0,-1,2]
```

```
A =
       2            -1             0
      -1             2            -1
```

```
       0            -1             2
```

```
b = [6;2;-6]
```

```
b =
       6
       2
      -6
```

```
E21 = [1,0,0;1/2,1,0;0,0,1]
```

```
E21 =
       1             0             0
       1/2           1             0
       0             0             1
```

```
U = E21*A
```

```
U =
       2            -1             0
       0             3/2          -1
       0            -1             2
```

```
E32 = [1,0,0;0,1,0;0,2/3,1]
```

```
E32 =
       1             0             0
       0             1             0
       0             2/3           1
```

```
U = E32 * U
```

```
U =
       2            -1             0
       0             3/2          -1
       0             0             4/3
```

```
L = E21^-1 * E32^-1
```

```
L =
       1             0             0
      -1/2           1             0
       0            -2/3           1
```

```
c = L^-1 * b
```

```
c =
       6
       5
      -8/3
```

```
% 要 Symbolic Math Toolbox
syms x y z;
eqn = U * [x;y;z] == c;
solx = solve(eqn, x,y,z);
Answer = [solx.x;solx.y;solx.z]
```

```
Answer =
```

$$\begin{pmatrix} 4 \\ 2 \\ -2 \end{pmatrix}$$

1.4.7

```
clear
L = [1,0,0;-1,1,0;0,-1,1]
```

```
L =
      1     0     0
     -1     1     0
      0    -1     1
```

```
U = [1,-1,0;0,1,-1;0,0,1]
```

```
U =
      1    -1     0
      0     1    -1
      0     0     1
```

```
b = [2;-3;4]
```

```
b =
      2
     -3
      4
```

```
c = L^-1 * b
```

```
c =
      2
     -1
      3
```

```
% 要 Symbolic Math Toolbox
syms x y z;
eqn = U * [x;y;z] == c;
solx = solve(eqn, x,y,z);
Answer = [solx.x;solx.y;solx.z]
```

```
Answer =
```

$$\begin{pmatrix} 4 \\ 2 \\ 3 \end{pmatrix}$$