```
%Truss Structure
%Problems 1-4

%Joints in Order
% f = [f1;
%      f2;
%      f3;
%      f4;
%      f5;
%      F1;
%      F2]
aMatrix = [-sqrt(2)/2, 0, 1/2, 0, 0, 0, 0;
           -sqrt(2)/2, -1, -sqrt(3)/2, 0, 0, 0, 0;
           sqrt(2)/2, 0, 0, 1, 0, 0, 0;
           sqrt(2)/2, 0, 0, 0, 0, -1, 0;
           0, 0, 0, -1, 1, 0, 0;
           0, 1, 0, 0, 0, 0, 0;
           0, 0, -1/2, 0, -1, 0, 0;
           0, 0, sqrt(3)/2, 0, 0, 0, -1];
%Solution must be multiplied by 1000
       solutionMatrix = [0;
                  0;
                  0;
                  0;
                  0;
                  5;
                  0;
                  0];
sizeA = size(aMatrix)
sizesSolution = size(solutionMatrix)
rrefForm = rref(aMatrix)
RANK = rank(rrefForm)
M = [aMatrix, solutionMatrix];
rref([aMatrix, solutionMatrix])

%Solution must be multiplied by 1000
syms a;
       solutionMatrix2 = [0;
                  0;
                  0;
                  0;
                  0;
                  a;
                  0;
                  0];
              rref([aMatrix, solutionMatrix2])
             reset(symengine)
```

```
sizeA =

     8     7


sizesSolution =
```

```
     8     1


rrefForm =

     1     0     0     0     0     0     0
     0     1     0     0     0     0     0
     0     0     1     0     0     0     0
     0     0     0     1     0     0     0
     0     0     0     0     1     0     0
     0     0     0     0     0     1     0
     0     0     0     0     0     0     1
     0     0     0     0     0     0     0


RANK =

     7


ans =

  Columns 1 through 7

    1.0000         0         0         0         0         0         0
         0    1.0000         0         0         0         0         0
         0         0    1.0000         0         0         0         0
         0         0         0    1.0000         0         0         0
         0         0         0         0    1.0000         0         0
         0         0         0         0         0    1.0000         0
         0         0         0         0         0         0    1.0000
         0         0         0         0         0         0         0

  Column 8

   -2.5882
    5.0000
   -3.6603
    1.8301
    1.8301
   -1.8301
   -3.1699
         0


ans =

[ 1, 0, 0, 0, 0, 0, 0, -(2^(1/2)*a)/(3^(1/2) + 1)]
[ 0, 1, 0, 0, 0, 0, 0,                         a]
[ 0, 0, 1, 0, 0, 0, 0,       -(2*a)/(3^(1/2) + 1)]
[ 0, 0, 0, 1, 0, 0, 0,            a/(3^(1/2) + 1)]
[ 0, 0, 0, 0, 1, 0, 0,            a/(3^(1/2) + 1)]
[ 0, 0, 0, 0, 0, 1, 0,           -a/(3^(1/2) + 1)]
[ 0, 0, 0, 0, 0, 0, 1, -(3^(1/2)*a)/(3^(1/2) + 1)]
[ 0, 0, 0, 0, 0, 0, 0,                         0]
```

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