```
>> Z=[1,2,3;4,5,6;7,8,7;4,2,3;4,2,2]

Z =

     1     2     3
     4     5     6
     7     8     7
     4     2     3
     4     2     2

>> [Qm,Rm]=mgs(Z)

Qm =

    0.1010    0.3162    0.5420
    0.4041    0.3534    0.5162
    0.7071    0.3906   -0.5248
    0.4041   -0.5580    0.3871
    0.4041   -0.5580   -0.1204


Rm =

    9.8995    9.4954    9.6975
         0    3.2919    3.0129
         0         0    1.9701

>> [Q,R]=qr(Z)

Q =

   -0.1010   -0.3162    0.5420   -0.6842   -0.3577
   -0.4041   -0.3534    0.5162    0.3280    0.5812
   -0.7071   -0.3906   -0.5248    0.0094   -0.2683
   -0.4041    0.5580    0.3871    0.3656   -0.4918
   -0.4041    0.5580   -0.1204   -0.5390    0.4695


R =

   -9.8995   -9.4954   -9.6975
         0   -3.2919   -3.0129
         0         0    1.9701
         0         0         0
         0         0         0

>> [W,Rh]=house(Z)

W =

    0.7420         0         0
```

```
    0.2723    0.7866         0
    0.4765    0.1192   -0.9800
    0.2723   -0.4284    0.1842
    0.2723   -0.4284   -0.0748


Rh =

   -9.8995   -9.4954   -9.6975
   -0.0000   -3.2919   -3.0129
   -0.0000   -0.0000    1.9701

>> Qh=formQ(W)

Qh =

   -0.1010   -0.3162    0.5420
   -0.4041   -0.3534    0.5162
   -0.7071   -0.3906   -0.5248
   -0.4041    0.5580    0.3871
   -0.4041    0.5580   -0.1204

>> norm(Z-Qm*Rm,2)

ans =

   9.9301e-16

>> norm(Z-Q*R,2)

ans =

   3.5576e-15

>> norm(Z-Qh*Rh,2)

ans =

   4.7224e-15

>> norm(Q'*Q-eye(5),2)

ans =

   2.6684e-16

>> norm(Qm'*Qm-eye(3),2)

ans =

   1.8630e-15
```

```
>> norm(Qh'*Qh-eye(3),2)

ans =

   9.3441e-16

>>
```