

hydrogen-GS>matlab

< M A T L A B (R) >
(c) Copyright 1984-98 The MathWorks, Inc.
All Rights Reserved
Version 5.2.0.3084
Jan 17 1998

To get started, type one of these: helpwin, helpdesk, or demo.
For product information, type tour or visit www.mathworks.com.

```
>> A = [1 6 2; 3 5 9; 7 1 3]
```

```
A =  
    1    6    2  
    3    5    9  
    7    1    3
```

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

```
B =  
    8    6    2  
    1    5    1  
    3    7    4
```

EXERCISE II

```
>> A*B
```

```
ans =  
    20    50    16  
    56   106    47  
    66    68    27
```

```
>> B*A
```

```
ans =  
    40    80    76  
    23    32    50  
    52    57    81
```

EXERCISE III

```
>> F = [3 1; 2 4]
```

```
F =  
    3    1  
    2    4
```

```
>> FI = inv(F)
```

```
FI =  
    0.4000   -0.1000  
   -0.2000    0.3000
```

```
>> FI*F
```

```
ans =  
    1    0  
    0    1
```

EXERCISE V

```
>> F*FI
```

```
ans =  
    1    0  
    0    1
```

```
>> U=[sqrt(2/3) -sqrt(1/3); sqrt(1/3) sqrt(2/3)]
U =
    0.8165 -0.5774
    0.5774  0.8165
```

```
>> help conj
CONJ Complex conjugate.
      CONJ(X) is the complex conjugate of X.
```

```
>> UHC=conj(U')
UHC =
    0.8165  0.5774
   -0.5774  0.8165
```

```
>> UHC*U
```

```
ans =
     1     0
     0     1
```

```
>> help trace
```

```
TRACESum of diagonal elements.
      TRACE(A) is the sum of the diagonal elements of A, which is
      also the sum of the eigenvalues of A.
```

```
>> trace(A)
```

```
ans =
     9
```

```
>> trace(inv(B)*A*B)
```

```
ans =
    9.0000
```

```
>> H=[3 sqrt(2); sqrt(2) 2]
```

```
H =
    3.0000  1.4142
    1.4142  2.0000
```

```
>> UHC*H*U
```

```
ans =
    4.0000     0
    0.0000  1.0000
```

```
>> HP=[2 1; 1 2]
```

```
HP =
     2     1
     1     2
```

```
>> [U,E]=eig(HP)
```

```
U =
    0.7071  0.7071
   -0.7071  0.7071
```

```
E =
     1     0
     0     3
```

```
>> U'*HP*U
```

```
ans =
    1.0000     0
     0    3.0000
```

EXERCISE VII

EXERCISE VIII

EXERCISE XI

EXERCISE XII