```
Python 3.6.5 |Anaconda, Inc.| (default, Mar 29 2018, 13:32:41) [MSC v.1900 64 bit (AMD64)]
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IPython 6.4.0 -- An enhanced Interactive Python.

In [1]: runfile('C:/Users/hoops/OneDrive/Documents/School/ME EN 2450 Numerical Methods/
HW3/MatrixOperations.py', wdir='C:/Users/hoops/OneDrive/Documents/School/ME EN 2450
Numerical Methods/HW3')
Exercise 1
ansA =
[[ 5  8 15]
 [ 8  4 10]
 [ 6  0 10]]
ansB =
[[19 49 25]
 [ 5 14  7]
 [21 42 23]]
ansC =
[[ 3 -2 -1]
 [-6  0  4]
 [-2  0 -2]]
ansD =
[[28 21 49]
 [ 7 14 49]
 [14  0 28]]
ansE =
[[25 13 74]
 [36 25 75]
 [28 12 52]]
ansF =
[[3 6 1]]
ansG =
[[54 76]
 [41 53]
 [28 38]]
ansH =
[[ 9  2]
 [ 4 -1]
 [ 3  7]
 [-6  5]]



Exercise 2
ansA =
0.860000000000001
ansB =
x1 = [404.65116279]
x2 = [56.51162791]
```

```
Exercise 3
Naive Gauss Elimination Steps:

Original Matrix:
[[  5.    1.   -0.5]
 [ -6.  -12.    4. ]
 [  2.    2.   10. ]]

Perform forward elimination:
A =
[[  5.    1.   -0.5]
 [  0.  -12.    4. ]
 [  2.    2.   10. ]]
b =
[[  13.5]
 [-123. ]
 [ -43. ]]

A =
[[  5.    1.   -0.5]
 [  0.  -10.8   4. ]
 [  2.    2.   10. ]]
b =
[[  13.5]
 [-123. ]
 [ -43. ]]

A =
[[  5.    1.   -0.5]
 [  0.  -10.8   3.4]
 [  2.    2.   10. ]]
b =
[[  13.5]
 [-123. ]
 [ -43. ]]

A =
[[  5.    1.   -0.5]
 [  0.  -10.8   3.4]
 [  0.    2.   10. ]]
b =
[[  13.5]
 [-106.8]
 [ -43. ]]

A =
[[  5.    1.   -0.5]
 [  0.  -10.8   3.4]
 [  0.    1.6  10. ]]
b =
[[  13.5]
 [-106.8]
 [ -43. ]]
```

```
A =
[[  5.    1.   -0.5]
 [  0.  -10.8   3.4]
 [  0.    1.6  10.2]]
b =
[[  13.5]
 [-106.8]
 [ -43. ]]

A =
[[  5.    1.   -0.5]
 [  0.  -10.8   3.4]
 [  0.    0.   10.2]]
b =
[[  13.5]
 [-106.8]
 [ -48.4]]

A =
[[  5.          1.         -0.5      ]
 [  0.        -10.8         3.4      ]
 [  0.          0.         10.7037037]]
b =
[[  13.5]
 [-106.8]
 [ -48.4]]


Perform back substitution:
A =
[[  5.          1.         -0.5      ]
 [  0.        -10.8         3.4      ]
 [  0.          0.         10.7037037]]
b =
[[  13.5       ]
 [-106.8       ]
 [ -64.22222222]]

x =
[[ 0.]
 [ 0.]
 [-6.]]

x =
[[ 0.]
 [ 8.]
 [-6.]]

x =
[[ 0.5]
 [ 8. ]
 [-6. ]]

Final x =
[[ 0.5]
```

```
 [ 8. ]
 [-6. ]]
```

In [2]: