

## Code

```
import numpy as np

A = np.matrix([          # 3x3 matrix
    [130, 120, 105],
    [4, 3, 1],
    [2, 5, 1]
])
B = np.matrix([          # 2x3 matrix
    [6, 7],
    [4, 5],
    [8, 9]
])
C = np.matrix([          # 3x3 matrix
    [5, 2, 7],
    [3, 5, 1],
    [7, 2, 1]
])
D = np.matrix([          # 1x3 matrix
    [245],
    [6],
    [7]
])

aplusc = np.add(A, C)      # add matrices
aminusc = np.subtract(A, C) # subtract matrices
atimesc = np.matmul(A, C)  # multiply matrices
ctimesd = np.matmul(C, D)  # multiply matrices

x = np.linalg.solve(A, D)  # solve linear matrix equation
status = np.allclose(np.dot(A, x), D) # Ensure true

print("A + C: \n%s" % aplusc)
print("A - C: \n%s" % aminusc)
print("AC: \n%s" % atimesc)
print("CD: \n%s" % ctimesd)

print("\n\nAx = D: \n%s\nThe solution is: %s" % (x, status))
```

## Results

A + C:

[[135 122 112]

[ 7 8 2]

[ 9 7 2]]

A - C:

[[125 118 98]

[ 1 -2 0]

[-5 3 0]]

AC:

[[1745 1070 1135]

[ 36 25 32]

[ 32 31 20]]

CD:

[[1286]

[ 772]

[1734]]

Ax = D:

[[0.59278351]

[1.09278351]

[0.35051546]]

The solution is: True