

Gaussian elimination

In [1]:

```
#keep  
import numpy as np
```

In [2]:

```
#keep  
  
np.random.seed(5)  
n = 4  
A = np.round(np.random.randn(n, n) * 5)  
A
```

Out[2]:

```
array([[ 2., -2., 12., -1.],  
       [ 1.,  8., -5., -3.],  
       [ 1., -2., -6., -1.],  
       [-2.,  3., -8., -4.]])
```

Now compute A1 to eliminate A[1,0]:

In [3]:

```
A1 = A.copy()  
A1[1] -= 1/2*A1[0]  
A1
```

Out[3]:

```
array([[ 2. , -2. , 12. , -1. ],  
       [ 0. ,  9. , -11. , -2.5],  
       [ 1. , -2. , -6. , -1. ],  
       [-2. ,  3. , -8. , -4. ]])
```

And A2 with A[2,0] == 0:

In [4]:

```
A2 = A1.copy()  
A2[2] -= 1/2*A[0]  
A2
```

Out[4]:

```
array([[ 2. , -2. , 12. , -1. ],  
       [ 0. ,  9. , -11. , -2.5],  
       [ 0. , -1. , -12. , -0.5],  
       [-2. ,  3. , -8. , -4. ]])
```

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