In [ ]:
```
Q1 and Q2:
```

In [77]:
```
A = matrix(FiniteField(5), 3, [1,1,2,4, 0, 4,3,2,
```

In [78]:
```
A
```

Out[78]:
```
[1 1 2 4]
[0 4 3 2]
[3 2 4 4]
```

In [75]:
```
A1 = matrix(QQ, 3, [1,1,2,4, 0, 4,3,2,   -2,2,-1,4]
A1
```

Out[75]:
```
[ 1  1  2  4]
[ 0  4  3  2]
[-2  2 -1  4]
```

In [76]:
```
A1.rref()   # note this is rref over R, not correct
```

Out[76]:
```
[  1   0 5/4   0]
[  0   1 3/4   0]
[  0   0   0   1]
```

In [79]:
```
A.rref()   # correct answer for Q1
```

Out[79]:
```
[1 0 0 1]
[0 1 2 3]
[0 0 0 0]
```

In [80]:
```
C = matrix(FiniteField(5), 3, [1,2,3, 0,1,3, 0,2,1]
```

In [81]:
```
C
```

Out[81]:
```
[1 2 3]
[0 1 3]
[0 2 1]
```

In [82]:
```
C.rref()
```

Out[82]:
```
[1 0 2]
[0 1 3]
[0 0 0]
```

```
Q 2:   basis of kernel:[1,0,0] and [2,1,2]
basis of image: [2,3,-1] or multiple of it.
```