Kernel: SageMath 9.1

In [1]:
```
2 + 2
#Press Shift+Enter to evaluate this cell
```

Out[1]: 4

In [2]:
```
#Check an answer to a system of equations
x = 12
y = 4
```

In [3]:
```
x+y == 16
```

Out[3]: True

In [4]:
```
5*x+10*y == 100
```

Out[4]: True

In [19]:
```
A = Matrix([
        [1,2,3,2],
        [2,5,3,2],
        [1,3,5,2],
        ])
```

In [20]:
```
#Reduced Row-Echelon Form
A.rref()
```

Out[20]:
```
[   1    0    0 12/5]
[   0    1    0 -4/5]
[   0    0    1  2/5]
```

In [21]:
```
B = Matrix([
        [1,2],
        [0,3]
        ])
```

In [22]:
```
#Inverse
B.inverse()
```

Out[22]:
```
[   1 -2/3]
[   0  1/3]
```

In [23]:
```
#Product of matrices
B*B
```

Out[23]:
```
[1 8]
[0 9]
```

In [3]:
```
A
```

Out[3]:
```
[1 2 3 2]
[2 5 3 2]
[1 3 5 2]
```

In [4]:
```
#Plotting vectors
v = vector([1,2,3]); w=vector([2,3,1]); plot(v)+plot(w)
```

Out[4]:

In [5]:
```
plot(v)
```

Out[5]:

In [3]:
```
A = matrix([
        [1,1,1],
        [1,2,x],
        [1,4,x^2],
        ])
```

In [4]:
```
E_1 = matrix([
        [1,0,0],
        [-1,1,0],
        [0,0,1]
        ])
```

In [5]:
```
E_1*A
```

Out[5]:
```
[    1     1     1]
[    0     1 x - 1]
[    1     4   x^2]
```

In [6]:
```
E_2 = matrix([
        [1,0,0],
        [0,1,0],
```

```
        [-1,0,1]
        ])
```

In [7]:
```
E_2*E_1*A
```

Out[7]:
```
[      1       1       1]
[      0       1   x - 1]
[      0       3 x^2 - 1]
```

In [8]:
```
E_3 = matrix([
        [1,-1,0],
        [0,1,0],
        [0,0,1]
        ])
E_4 = matrix([
        [1,0,0],
        [0,1,0],
        [0,-3,1]
        ])
```

In [9]:
```
E_4*E_3*E_2*E_1*A
```

Out[9]:
```
[            1             0         -x + 2]
[            0             1           x - 1]
[            0             0 x^2 - 3*x + 2]
```

In [0]:
```

```