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

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

```
In [2]: A.det()
```

Out[2]: 5

```
In [3]: A.inverse()
```

Out[3]: [-1   1   -2]
        [2/5 -1/5   1]
        [2/5 -1/5   0]

```
In [4]: rank(A)
```

Out[4]: 3

```
In [5]: B = matrix([1, 3, 2])
        B
```

Out[5]: [1 3 2]

```
In [6]: C = block_matrix([[A, transpose(B)]])
        C
```

Out[6]: [1 2 3| 1]
        [2 4 1| 3]
        [0 1 -1| 2]

```
In [7]: D = block_matrix([[A], [B]])
        D
```

Out[7]: [1 2 3]
        [2 4 1]
        [0 1 -1]
        [--------]
        [1 3 2]

```
In [8]: E = block_matrix([[A, 0], [0, B]])
        E
```

Out[8]: [1 2 3| 0 0 0]
        [2 4 1| 0 0 0]
        [0 1 -1| 0 0 0]
        [--------+--------]
        [0 0 0| 1 3 2]

```
In [9]: E.rank()
```

Out[9]: 4

```
In [10]: a = E.column(0)
         a
```

Out[10]: (1, 2, 0, 0)

```
In [11]: a.norm()
```

Out[11]: sqrt(5)

```
In [12]: b = E.column(3)
         a.inner_product(b)
```

Out[12]: 0

In [ ]: