

```
In [2]: p=17; F=GF(p); #ejemplo visto en clase
```

```
In [4]: R.<X>=PolynomialRing(F);
```

```
In [5]: f=3+ 14*X + 15*X^2;
```

```
In [6]: f(1),f(2),f(3),f(4),f(5)
```

```
Out[6]: (15, 6, 10, 10, 6)
```

```
In [7]: 139 % 17
```

```
Out[7]: 3
```

```
In [11]: Pollag=R.lagrange_polynomial([(1,f(1)),(2,f(2)),(3,f(3))]); Pollag
```

```
Out[11]: 15*X^2 + 14*X + 3
```

```
In [12]: Pollag(0)
```

```
Out[12]: 3
```

```
In [43]: q=10007; FF=GF(q); S.<x>=PolynomialRing(FF); # Ahora vemos el ejemplo del PIN de la tarjeta de credito
```

```
In [44]: pin=1234;
```

```
In [48]: f=pin + FF.random_element()*x + FF.random_element()*x^2 + FF.random_element()*x^3; f
```

```
Out[48]: 2743*x^3 + 708*x^2 + 3039*x + 1234
```

```
In [52]: [(1,f(1)),(2,f(2)),(3,f(3)),(4,f(4))] #participaciones
```

```
Out[52]: [(1, 7724), (2, 2067), (3, 721), (4, 130)]
```

```
In [49]: Pollag=S.lagrange_polynomial([(1,f(1)),(2,f(2)),(3,f(3)),(4,f(4))]); Pollag
```

```
Out[49]: 2743*x^3 + 708*x^2 + 3039*x + 1234
```

```
In [50]: Pollag=S.lagrange_polynomial([(1,f(1)),(2,f(2)),(3,f(3))]); Pollag #si se juntan menos de cuatro
```

```
Out[50]: 7159*x^2 + 2887*x + 7685
```

```
In [53]: Pollag=S.lagrange_polynomial([(1,f(1)),(2,f(2)),(3,f(3)),(4,333)]); Pollag #si uno miente
```

```
Out[53]: 1109*x^3 + 505*x^2 + 5079*x + 1031
```

```
In [ ]:
```