

ExamenMaster2018

```
Qxy.<x,y>=PolynomialRing(QQ,order='lex')
```

```
f1=4*x^2+y^2-16
```

```
f2=x*y+2*x-y-4
```

```
I=Qxy.ideal([f1,f2])
```

```
G=I.groebner_basis()
```

```
G
```

```
[x + 1/8*y^3 + 1/4*y^2 - 3/2*y - 2, y^4 + 4*y^3 - 8*y^2 - 32*y]
```

```
factor(G[1])
```

```
y * (y + 4) * (y^2 - 8)
```

```
kx.<x>=PolynomialRing(GF(11))
```

```
P=x^10-x+1
```

```
gcd(P,x^11-x)
```

```
x + 9
```

```
Zx.<x>=PolynomialRing(ZZ)
```

```
P=x^10-x+1
```

```
diff(P,x)
```

```
10*x^9 - 1
```

```
def Relevement(p,P,r,n):
```

```
    Pp=diff(P,x)
```

```
    k=1
```

```
    rk=r
```

```
    pk=p
```

```
    while k<n :
```

```
        t=(-mod(Pp(rk),pk)^(-1)*(P(rk)//pk)).lift()
```

```
        rk=rk+t*pk
```

```
        k=2*k
```

```
        pk=pk^2
```

```
        rk=rk%pk
```

```
    return rk%p^n
```

```
Relevement(11,P,2,7)
```

```
2924528
```

```
r=_
```

```
P(r)%11^7
```

```
0
```

