

Some integer and polynomial commands in Maple

For $a, b \in \mathbb{Z}$ we have

```
r := irem(a,b); or r := irem(a,b,'q');  
q := iquo(a,b,x); or q := iquo(a,b,x,'r');  
g := igcd(a,b);  
g := igcdex(a,b,'s','t');    solve  $sa + tb = g$  using the EEA  
g := igcdex(a,b,'s');    don't compute  $t$ 
```

For $a, b \in F[x]$ where $F = \mathbb{Q}$ or $\mathbb{Q} \subset F$

```
c := expand(a*b);    multiply out  $ab$   
r := rem(a,b,x); or r := rem(a,b,x,'q');  
q := quo(a,b,x); or q := quo(a,b,x,'r');  
g := gcdex(a,b,x);    the monic gcd  
g := gcdex(a,b,x,'s','t');    solve  $sa + tb = g$  using the EEA  
g := gcdex(a,b,x,'s');    don't compute  $t$ 
```

For $a, b \in F[x]$ where $F = \mathbb{Z}_p$ or $\mathbb{Z}_p \subset F$

```
c := Expand(a*b) mod p;    multiply out  $ab$   
r := Rem(a,b,x) mod p; or r := Rem(a,b,x,'q') mod p;  
q := Quo(a,b,x) mod p; or q := Quo(a,b,x,'r') mod p;  
g := Gcdex(a,b,x) mod p;    the monic gcd  
g := Gcdex(a,b,x,'s','t') mod p;    solve  $sa + tb = g$  using the EEA  
g := Gcdex(a,b,x,'s') mod p;    don't compute  $t$ 
```

For $a, b \in \mathbb{Q}[x_1, x_2, \dots, x_n]$ we have

```
c := expand(a*b);    multiplies out  $ab$   
divide(a,b);    tests if  $b|a$   
divide(a,b,'q');    also computes  $q = a/b$  if  $b|a$   
g := gcd(a,b);  
g := gcd(a,b,'c','d');    also computes  $c = a/g$  and  $d = b/g$ 
```

For $a, b \in \mathbb{Z}_p[x_1, x_2, \dots, x_n]$ we have

```
c := Expand(a*b) mod p;    multiplies out  $ab$   
Divide(a,b) mod p;    tests if  $b|a$   
Divide(a,b,'q') mod p;    also computes  $q = a/b$  if  $b|a$   
g := Gcd(a,b) mod p;  
g := Gcd(a,b,'c','d') mod p;    also computes  $c = a/g$  and  $d = b/g$ 
```