

Tutorial 3

Betti numbers and generic ideals

Hilbert Functions

```
Use R ::= Q[x,y,z];  
  
I := Ideal(x^3, y^2, z);  
HilbertSeries(R/I);  
HilbertFn(R/I);  
HVector(R/I);  
HF := HilbertFn(R/I);  
EvalHilbertFn(HF, 3);
```

Segments

```
IsLexSegment(I);  
  
Define Seg(D, J)  
  Return First(Support(DensePoly(D)), J);  
EndDefine;  
  
Use Q[x[1..3]], DegRevLex; Seg(2, 4);  
Use Q[x[1..4]], DegRevLex; Seg(2, 4);  
  
Use Q[x[1..3]], DegLex; Seg(2, 4);  
Use Q[x[1..4]], DegLex; Seg(2, 4);
```