Using Maplets to Construct Finite Fields Exercises

1. For each of the following polynomials $p(x)$, all of whom are primitive in $Z\_{2}[x]$, construct the field elements that correspond to powers of a in $Z\_{2}\left[x\right]/p(x)$.

 a. 

 b. 

 c. 

 d. 

2. For each of the following polynomials$ p(x)$, both of whom are primitive in $Z\_{5}[x]$, construct the field elements that correspond to powers of a in $Z\_{5}\left[x\right]/p(x)$.

 a. 

 b. 

3. Find a primitive polynomial of degree 4 in $Z\_{3}[x]$, and use this polynomial to construct the non-zero elements in a finite field.

4. Find a primitive polynomial of degree 2 in $Z\_{11}[x]$ and use this polynomial to construct the non-zero elements in a finite field.

5. Use a primitive polynomial to construct the nonzero elements in a finite field of order 127.