F:= GF(3);

R<y>:=PolynomialRing(F);

f:=PrimitivePolynomial(F, 4); // 4 is order of 3 mod 10. In general, we need ord\_q(n): order of q mod n, say m

F81<a>:=ext<GF(3)|f>; //a root of a prim poly is a prim elt of GF(q^m)

P<x>:=PolynomialRing(F81);

Order(a);

b:=a^8; // To find the prim nth root of unity, we need to take the appropriate power of a: (q^m-1)/n

p:=(x-b)\*(x-b^3)\*(x-b^7)\*(x-b^9); //{1,3,7,9} is a cyclotomic coset of 3 mod 10

P;