```
> a := randpoly(x,degree=2);
```
$$a := -7x^2 + 22x - 55$$

```
> b := randpoly(x,degree=2);
```
$$b := -94x^2 + 87x - 56$$

```
> expand(a*b);
```
$$658x^4 - 2677x^3 + 7476x^2 - 6017x + 3080$$

```
> phi := proc(f,p) f mod p end;
```
$$\phi := \text{proc}(f, p) \ f \bmod p \ \text{end proc}$$

```
> m1 := 41;
```
$$m1 := 41$$

```
> phi(a,m1);
```
$$34x^2 + 22x + 27$$

```
> u1 := phi( expand( phi(a,m1)*phi(b,m1) ), m1 );
```
$$u1 := 2x^4 + 29x^3 + 14x^2 + 10x + 5$$

```
> m2 := 43;
```
$$m2 := 43$$

```
> u2 := Expand(a*b) mod m2;
```
$$u2 := 13x^4 + 32x^3 + 37x^2 + 3x + 27$$

```
> u := chrem([u1,u2],[m1,m2]);
```
$$u := 658x^4 + 849x^3 + 424x^2 + 1035x + 1317$$

```
> M := m1*m2;
```
$$M := 1763$$

```
> mods(u,M);
```
$$658x^4 + 849x^3 + 424x^2 - 728x - 446$$

```
> m3 := 47;
```
$$m3 := 47$$

```
> u3 := Expand(a*b) mod m3;
```
$$u3 := 2x^3 + 3x^2 + 46x + 25$$

```
> u := chrem([u1,u2,u3],[m1,m2,m3]);
```
$$u := 658x^4 + 80184x^3 + 7476x^2 + 76844x + 3080$$

```
> M := M*m3;
```
$$M := 82861$$

```
> mods(u,M);
```
$$658x^4 - 2677x^3 + 7476x^2 - 6017x + 3080$$