```
> restart;
> 18 mod 5;
```

$$3$$

```
> 2 mod 5;
```

$$2$$

```
> -3 mod 5;
```

$$2$$

```
> 18^5705890543 mod 37;
Error, Maple was unable to allocate enough memory to complete this
computation.  Please see ?alloc
> 18&^5705890543 mod 37;
```

$$19$$

```
> p:=nextprime(027895407895432078954325328904757278906643);
```

$$p := 27895407895432078954325328904757278906669$$

```
> q:=nextprime
  (0278954078954320789543255243543254323289047572789O643);
```

$$q := 27895407895432078954325524354325432328904757278906681$$

```
> isprime(p),isprime(q);
```

$$true, true$$

```
> N:=p*q;
```

$$N := 778153781652534368372692393024673297570913048570450088222252174500704089892746\backslash 084751955589$$

```
> PhiN:=(p-1)*(q-1);
```

$$PhiN := 778153781652534368372692393024673297570634094491495488478629964936371292316168\backslash 5133296174240$$

```
> e:=rand(1..PhiN)();
```

$$e := 22416379746916276654283762500774850217544287796668838253921278780679159579626\backslash 2817240853951$$

```
> igcd(PhiN,e);
```

$$1$$

```
> igcdex(PhiN,e,'L','M');
```

$$1$$

```
> L,M;
```

$$-3007703480094709823816143861873073651304745132121945338906953859843751275249847\backslash 9837677336,$$
$$1044082882048406078577368280525304384343926597057896838887709504398731356091108\backslash 853067920191$$

```
> Mtwo:=M mod PhiN; #see exercise 1.13
```

$$Mtwo :=$$

```
    104408288204840607857736828052530438434392659705789683888770950439873135609110 8\
    853067920191
```

```
> d:=Mtwo;
```

$$d := 104408288204840607857736828052530438434392659705789683888770950439873135609110 8\ 853067920191$$

```
> X:=5945354542542354322355425425432;
```

$$X := 5945354542542354322355425425432$$

```
> ENCRYPTED:=X&^e mod N;
```

$$ENCRYPTED := 677937668460101603132943534324431391610001113195102993386275585492708160963555 9\ 569320873300$$

```
> DECRYPTED:=ENCRYPTED&^d mod N;
```

$$DECRYPTED := 5945354542542354322355425425432$$