

## SOME COMMANDS IN WOLFRAM ALPHA

Here are problems and the commands that are typed to solve them with Wolfram Alpha.

- (1) Reduce 13456 modulo 147:

`13456 mod 147`

- (2) Find a solution to  $14x + 17y = 1$  in  $\mathbf{Z}$ :

`solve 14*x + 17*y = 1 in integers`

(Be careful: Wolfram Alpha gives the general solution with  $y$  first, but a particular solution with  $x$  first.)

- (3) Find the gcd of 1457 and 4277:

`gcd(1457,4277)`

- (4) Compute  $14^5 \bmod 29$ :

`14^5 mod 29`

- (5) Find the inverse of 14 mod 29 (that is, solve  $14x \equiv 1 \bmod 29$ ):

`14^(-1) mod 29`

- (6) Find the solutions to  $x^4 \equiv 1 \bmod 625$ :

`solve x^4 = 1 mod 625`

- (7) Factor 187641 into primes:

`factor 187641`

- (8) List the primes up to 100:

`primes <= 100`

(If you ask `primes below 100` you will get only a partial list, but pressing the More button that pops up will give you the whole list.)

- (9) List the primes from 50 to 100:

`primes from 50 to 100`

- (10) The 1000th prime:

`1000th prime`

- (11) Find a random integer from 0 to 15647:

`RandomInteger[15647]`

- (12) Compute the Jacobi symbol  $(\frac{35}{1001})$ :

`JacobiSymbol[35,1001]`