```
b = 2a
c = a + b
                         mp_add(&a, &b, &c)
                                                                                                   mp_mul_2(&a, &b
c = a - b
                         mp_sub(&a, &b, &c)
                                                                  b = a/2
                                                                                                   mp_div_2(&a, &b
                                                                  c = 2^b a
c = ab
                         mp_mul(&a, &b, &c)
                                                                                                   mp_mul_2d(&a, b
b = a^2
                                                                  c = a/2^b, d = a \mod 2^b
                         mp_sqr(&a, &b)
                                                                                                   mp_div_2d(&a, b
c = |a/b|, d = a \mod b
                         mp_div(&a, &b, &c, &d)
                                                                  c = a \mod 2^b
                                                                                                   mp_mod_2d(&a, b
                                                                  c = a \vee b
a = b
                         mp_set_int(&a, b)
                                                                                                   mp_or(&a, &b, &
b = a
                         mp_copy(&a, &b)
                                                                  c = a \wedge b
                                                                                                   mp_and(&a, &b,
                                                                  c=a\oplus b
                                                                                                   mp_xor(&a, &b,
                                                                  d = a + b \mod c
b = -a
                         mp_neg(&a, &b)
                                                                                                   mp_addmod(&a, &
                                                                  d = a - b \mod c
b = |a|
                         mp_abs(&a, &b)
                                                                                                   mp_submod(&a, &
                                                                  d = ab \mod c
                                                                                                   mp_mulmod(&a, &
                                                                  c=a^2 \!\!\mod b
Compare a and b
                         mp_cmp(&a, &b)
                                                                                                   mp_sqrmod(&a, &
                                                                  c = a^{-1} \mod bd = a^b \mod c
Is Zero?
                         mp_iszero(&a)
                                                                                                   mp_invmod(&a, &
Is Even?
                         mp_iseven(&a)
                                                                                                   mp_exptmod(&a,
Is Odd?
                         mp_isodd(&a)
                         mp_unsigned_bin_size(&a)
                                                                  res = 1 if a prime to t rounds?
                                                                                                   mp_prime_is_pri
||a||
buf \leftarrow a
                         mp_to_unsigned_bin(&a, buf)
                                                                  Next prime after a to t rounds.
                                                                                                   mp_prime_next_p
a \leftarrow buf[0..len-1]
                         mp_read_unsigned_bin(&a, buf, len)
```

mp_sqrt(&a, &b)

mp_n_root(&a, b, &c)

 $b=\sqrt{a}$

 $c = a^{1/b}$

 $c = \gcd(a, b)$

c = lcm(a, b)

mp_gcd(&a, &b,

mp_lcm(&a, &b,