**Algorithm for Polynomial Division**

Input: Two polynomials $a(x)$ and $b(x)$.

Output: Quotient polynomial $q(x)$ and remainder polynomial $r(x)$.

Step 1. $q := [\ ];\ a' := a;\ c := lc(b);\ m := deg(a');\ n := deg(b)$.

Step 2. While $m \geq n$ do

Step 2.1 $d := lc(a')/c;\ q := CONS(d, q);\ a' := a' - d \cdot x^{m-n} \cdot b$.

Step 2.2 For $i = 1$ to min $\{m - deg(a') - 1, m - n\}$ do
$q := CONS(0, q);\quad m := deg(a')$.

Step 3. $q := INV(q);\ r := a';$ return.

**Algorithm for Polynomial Pseudo-Division**

Input: Two polynomials $a(x)$ and $b(x)$.

Output: Pseudoquotient polynomial $q(x)$ and pseudoremainder polynomial $r(x)$.

Step1. $q := [\ ];\ a' := a;\ c := lc(b);\ m := deg(a');\ n := deg(b)$.

Step 2. $c^{(1)} := c;$ for $i = 2$ to $m - n$ do $c^{(i)} := c \cdot c^{(i-1)}$.

Step 3. While $m \geq n$ do

Step 3.1 $d := lc(a')c^{(m-n)};\ q := CONS(d, q);\quad a' := c \cdot a' - lc(a') \cdot x^{m-n} \cdot b$.

Step 3.2 For $i = 1$ to min $\{m - deg(a') - 1, m - n\}$ do
$q := CONS(0, q);$
$a' := c \cdot a'$.

Step 3.3 $m := deg(a')$.

Step 4. $q := INV(q);\ r := a';$ return.