

Theorem 4.3.6. Polynomial division with remainder

For every $p \in \mathcal{P}_N$ and $u \in \mathcal{P}_m$, $m \leq N$, there exist unique polynomials $q \in \mathcal{P}_{N-m}$ and $r \in \mathcal{P}_{m-1}$ such that

$$p = uq + r .$$