Cheatography

Modern Algebra - Arithmetic in $F[\boldsymbol{x}]$ Cheat Sheet by hbrooke7 via cheatography.com/201797/cs/42754/

4.1 Definitions/Things that are clear		4.1 Theorems
A <i>Polynomial</i> <i>with Coeffi-</i> <i>cients</i> in R (Let R be any ring)	An expression of the form: $a0+a1x+a2x^2++a_n_x^n$ where <i>n</i> is a nonnegative integer and $a_i \in R$	Theorem 4.1 If <i>R</i> is a ring, then there exists a ring <i>P</i> that contains an element <i>x</i> that is not in <i>R</i> and has these properties:
Expression: a0 + a1x + $a_2 x^2 + \dots +$ $a_n x^n$	An expression of this form makes sense, provided that the <i>a_i</i> and <i>x</i> are all elements of some larger ring	
In Thm 4.1, the elements of the ring P are called	polynomials with coeffi- cients in R	
In Thm 4.1, the elements a_i are called	coefficients	
In Thm 4.1, the special element <i>x</i> is called an	indeterminate	Theorem 4.2

& Corollaries

n 4.1	(i) R is a subring of P.
ring,	<i>(ii) xa = ax for every a∈R</i>
re	(iii) Every element of P
ring P	can be written in the form
tains	a0+a1x+a2x ² ++a_n_x ⁿ
ent x	for some n≥0 and a_i ∈ R
ot in R	(iv)The representation of
these	elements in P in (iii) is
<i>95:</i>	unique in this sense: if
	n≤m and
	a0+a1x+a2x ² ++a_n_x ⁿ
	=
	$b0+b1x+b2x^2++b_m_x^m$
	then a_i = b_i for i≤n and
	<i>b_i = 0R</i> for each <i>i>n</i> .
	(V)
	a0+a1x+a2x ² ++a_n_x ⁿ
	= 0R if and only ifa_i = 0R
	for every i.
4.2	

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