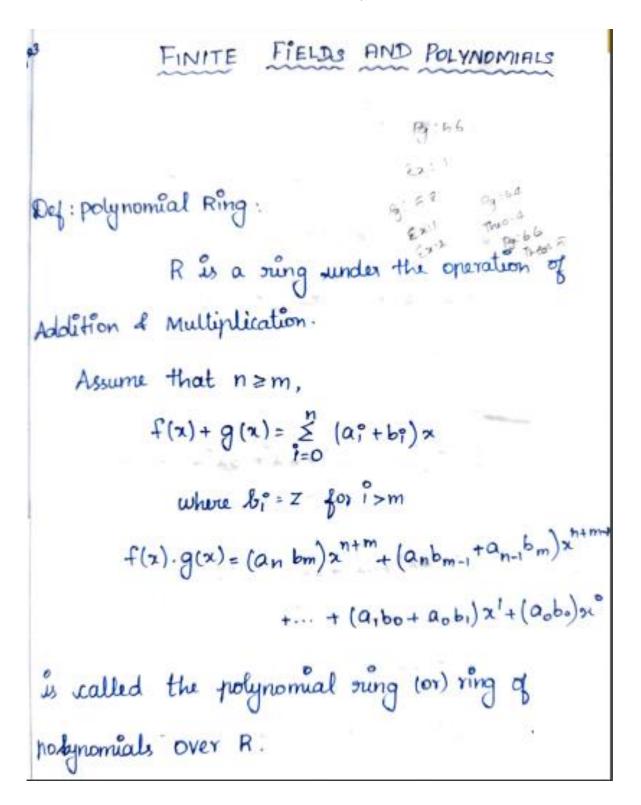


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TOPIC: 1-Polynomials

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1.4.4

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Example 1:
Let
$$f(x) \cdot g(x) \in z_{+}(x)$$
, where
 $f(x) = gx^{4} + gx^{3} + gx^{3} + x^{4} + and$
 $g(x) = gx^{3} + 5x^{2} + 5x + 1$, determine the
values of $f(x) + g(x) \cdot f(x) - g(x)$
 $f(x) + g(x)$
Solution:
 $f(x) + g(x) = (gx^{4} + gx^{3} + gx^{2} + x + 4) + (gx^{2} + 5x^{2} + 6x + 1)$
 $= gx^{4} + 5x^{3} + gx^{2} + 1x + 5x$
 $(gx^{2} + 5x^{2} + 6x + 1)$
 $= gx^{4} + 5x^{3} + gx^{2} + 1x + 5x$
 $(gx^{1} - g(x) = (gx^{4} + gx^{3} + gx^{2} + x + 4) - (gx^{3} + 5x^{2} + 6x + 1)$
 $= gx^{4} + 5x^{3} + 1x^{2} + 5x$
 $f(x) - g(x) = (gx^{4} + gx^{3} + gx^{2} + x + 4) - (gx^{3} + 5x^{2} + 6x + 1)$
 $= gx^{4} - x^{3} - gx^{2} - 5x + 3$,
 $(1 \equiv 6 \pmod{7}), (-g \equiv 5 \pmod{3}),$
 $(-5 \equiv g \pmod{3})$
 $= gx^{4} + 6x^{2} + 5x^{2} + 9x + 3$



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$$\begin{aligned} g(x) * g(x) &= (Dx^{4} + Dx^{2} + 9x^{2} + 9x^{4} + 7x + h) * (Sx^{4} + 10x^{4} + 10x^{4} + 12x^{5} + Dx^{4}) + (5x^{4} + 10x^{4} + 12x^{5} + Dx^{4}) + (5x^{4} + 10x^{4} + 12x^{5} + Dx^{4}) + (9x^{4} + 19x^{4} + 12x^{5} + 3x^{2}) + (9x^{4} + 19x^{4} + 10x^{4}) + (10x^{4} + 10x^{4} + 10x^{5} + 10x^{5}$$