POLINOMOK:

$$5x^3 + 3x^2 + 7x - 6$$

$$7y^7 - 3y^2 + 4$$

$$(2+i)\cdot x^2 - 7x + (3+2i)$$

$$5x^3 + 3x^2 + 7x - 6$$

$$\not\downarrow$$

$$-6 + 7x + 3x^2 + 5x^3$$

$$\downarrow$$

$$\begin{pmatrix} -6, & 7, & 3, & 5 \end{pmatrix}$$

$$\;\; f_0 \quad f_1 \quad f_2 \quad f_3$$

$$f = \sum_{j=0}^{3} f_j x^j$$

$$
\begin{array}{rccccccc}
 & 3 & + & 4x & + & 5x^2 & + & 7x^3 \\
+ & 2 & + & -2x & + & 3x^2 & + & 4x^3 \\
\hline
 & 5 & + & 2x & + & 8x^2 & + & 11x^3
\end{array}
$$

$$f = (f_0, f_1, f_2, \ldots \quad)$$

$$g = (g_0, g_1, g_2, \ldots \quad)$$

$$f \pm g = (f_0 \pm g_0, f_1 \pm g_1, f_2 \pm g_2, \ldots \quad)$$

$$f \cdot g = ?$$

$$(2 + 7x + 3x^2) \cdot (1 + 8x + 2x^2)$$

$$= \ldots \ldots - (2 \cdot 2 + 7 \cdot 8 + 3 \cdot 1)x^2$$

$$f \cdot g = h = (h_0, h_1, h_2, \dots \quad)$$

$$h_k = \sum_{i=0}^{k} f_i \, g_{k-i}$$

$$h_2 = f_0 g_2 + f_1 \cdot g_1 + f_2 \cdot g_0$$

$$h_3 = f_0 g_3 + f_1 \cdot g_2 + f_2 \cdot g_1 + f_3 \cdot g_0$$

??
?

Def.:

g_3 „nem létezik" $\Rightarrow g_3 = 0$

$$g = (1, 8, 2)$$

$$\Downarrow$$

$$g = (1, 8, 2, 0, 0, 0 \dots \quad)$$

$$2348 : 7 = \boxed{335} = q$$

$$\begin{array}{l} 2348 \\ \;24 \\ \;\;38 \\ \;\;\;\boxed{3} = r \end{array}$$

$$2348 : 7 = 300 + 30 + 5$$

$$\begin{array}{r} 2348 \\ -2100 \\ \hline 248 \\ -210 \\ \hline 38 \\ -35 \\ \hline 3 \end{array}$$

$$(3x^3 + 4x^2 + 2x + 7) : (x+3) = 3x^2 + (-5)x + 17$$

$$-\ (3x^3 + 9x^2)$$

$$-5x^2 + 2x + 7$$

$$-5x^2 - 15x$$

$$+17x + 7$$

$$17x + 51$$

$$-44$$

r

$$(x^4 + 3x^3 - 2x^2 + x + 7) : (x^2 + x + 1) = x^2 + 2x - 5$$

$$x^4 + x^3 + x^2$$

f^*: $2x^3 - 3x^2 + x + 7$

$$2x^3 + 2x^2 + 2x$$

$$-5x^2 - x + 7$$

$$-5x^2 - 5x - 5$$

$$4x + 12$$

TÉTEL: $\forall f, g$ rac. polinomokra, ha $g \neq 0 \Rightarrow$

$\exists Q, R$ -"- : $f = g \cdot Q + R$

R foka $<$ g foka

ALGO:

$$f = f_n x^n + f_{n-1} \cdot x^{n-1} + \dots$$

$$g = g_m \cdot x^m + g_{m-1} \cdot x^{m-1} + \dots$$

ELSŐ TAG a Q-ban: $\frac{f_n}{g_m} \cdot x^{n-m}$

VISSZASZOROZZUK: $\boxed{\frac{f_n}{g_m} \cdot x^{n-m} \cdot g}$

$$f^* = f - \boxed{+(-}$$

ezzel foglalkozunk

REKURZIÓ:

$$f^* = g \cdot Q^* + R^*$$

$$Q = Q^* + \frac{f_n}{g_m} \cdot x^{n-m}$$

$$R = R^*$$