TEMAS

- RECURSÃO
  - "divide and conquer"
  - dividir para conquistar
- REPRESENTAÇÃO DE DADOS

POLINÓMIO	LISTA DE COEFICIENTES
$1 - 2x + x^2$	[1, -2, 1]
$2 + x + 0x^2 + x^3$	[2, 1, 0, 1]
$0 - x + x^3$	[0, -1, 0, 1]

$$P = 1 - 2x + 1 \cdot x^2 + 0x^3$$
$$Q = -2 + 1 \cdot x + 1 \cdot x^2 + 3x^3$$
$$P + Q = -1 - 1x + 2x^2 + 3x^3$$

ps = [1, -2, 1, 0]

qs = [-2, 1, 1, 3]

zip ps qs
= [(1, -2), (-2, 1), (1, 1), (0, 3)]
[-1, -1, 2, 3]

$$P = 1 + x$$
$$Q = 2 + 3x$$
$$P \times Q = (1 + x)(2 + 3x)$$
$$= 1 \cdot 2 + 1 \cdot 3x + 2x + 3x^2$$
$$= 2 + 5x + 3x^2$$

MULTIPLICAR POR CONSTANTE

$$P = a_0 + a_1 x + a_2 x^2 + \dots + a_n x_n^n$$

$$c \cdot P = \underline{ca_0} + \underline{ca_1} x + \underline{ca_2} x^2 + \dots + \underline{ca_n} x_n^n$$

constante

MULTIPLICAR POR X

$$P = a_0 + a_1 X + a_2 X^2 + \dots + a_n X^n$$

$$X \cdot P = \underbrace{a_0 X}_{0\,+} + a_1 X^2 + a_2 X^3 + \dots + a_n X^{n+1}$$

coeficiente zero "à cabeça"

P

$(0 : P)$

$$P = a_0 + a_1 \underline{X} + a_2 \underline{X}^2 + \dots + a_n \underline{X}^n$$

$$= \underline{a_0} + X(\underbrace{a_1 + a_2 X + \dots + a_n X^{n-1}}_{P'})$$

P' grau -1 que P

$$P = a_0 : \underbrace{a_1 : a_2 : \dots : a_n : [\,]}_{P'}$$

$$P = a_0 + X \cdot P'$$

$$Q = b_0 + X \cdot Q'$$

$$P \cdot Q = a_0 \cdot b_0 + a_0 \underline{X}\, Q' + b_0 \underline{X}\, P' + \underline{X^2}\, P' \cdot Q'$$

$$= \underline{a_0 b_0} + X\,(a_0 Q' + b_0 P' + X \cdot \underline{P' \cdot Q'})$$

$$(x - a)\,(x + a) = x^2 - a^2$$

$$(x - a)\,(x - a) = x^2 - 2a + a^2$$