Aula02P4
20/02/2024
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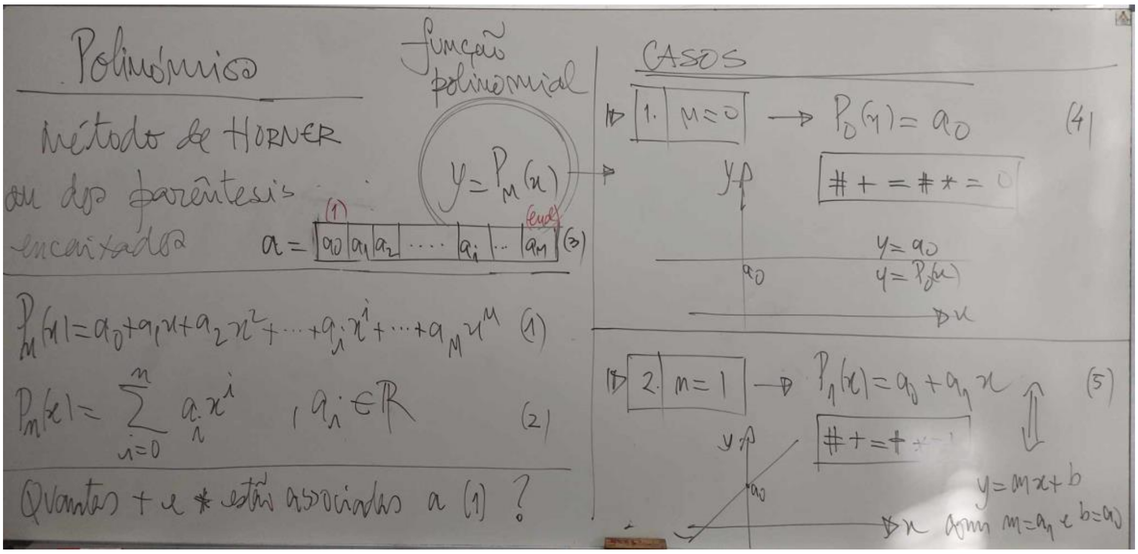
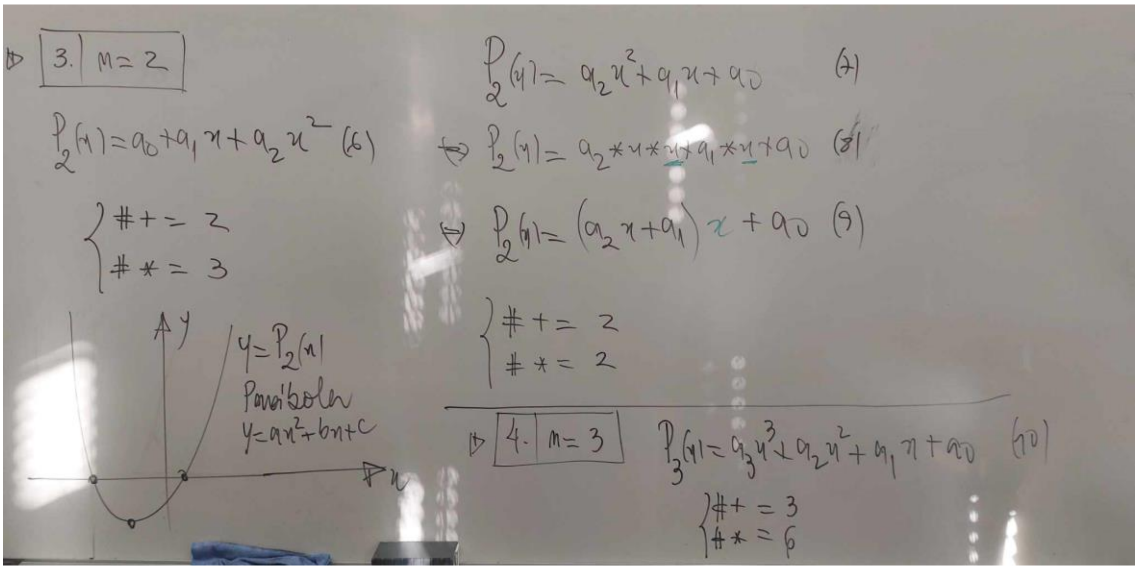




$$P_3(x) = a_3 * x * x * x + a_2 * x * x + a_1 * x + a_0$$

$$P_3(x) = \left((a_3 x + a_2) x + a_1 \right) x + a_0 \quad (11)$$

$$\begin{cases} \# + = 3 \\ \# * = 3 \end{cases}$$

$\boxed{4. \mid n = 3}$

$$P_3(x) = a_3 x^3 + a_2 x^2 + a_1 x + a_0 \quad (10)$$

$$\begin{cases} \# + = 3 \\ \# * = 6 \end{cases}$$

$\boxed{\text{Caso } n}$

$$P_n(x) = a_n x^n + a_{n-1} x^{n-1} + \cdots + a_2 x^2 + a_1 x + a_0 \quad (12)$$

$$\begin{cases} \# + = n \\ \# * = ?! \end{cases}$$

$$\# * = \sum \{1, 2, 3, \dots, n-1, n\} \quad (13)$$

$2 - 1 = 1$

$3 - 2 = 1$

$4 - 3 = 1$

$\vdots$

$n - (n-1) = 1$

$r = 1$

$$S_n = \frac{1+n}{2} * n = \left(\frac{1}{2} + \frac{n}{2}\right) * n = \frac{n}{2} + \frac{n^2}{2} = O(n^2)$$

(12) Progressão Aritmética

$$P_n(x) = ((a_n x + a_{n-1})x + a_{n-2})x + \dots + a_2)x + a_1)x + a_0 \quad (13)$$

$\#+ = n$

$\#* = n$

$a = \boxed{a_0 \mid a_1 \mid \dots \mid a_n}$ (1) … end

∴ Algoritmo método de Horner.

Input: a, x

Output: P

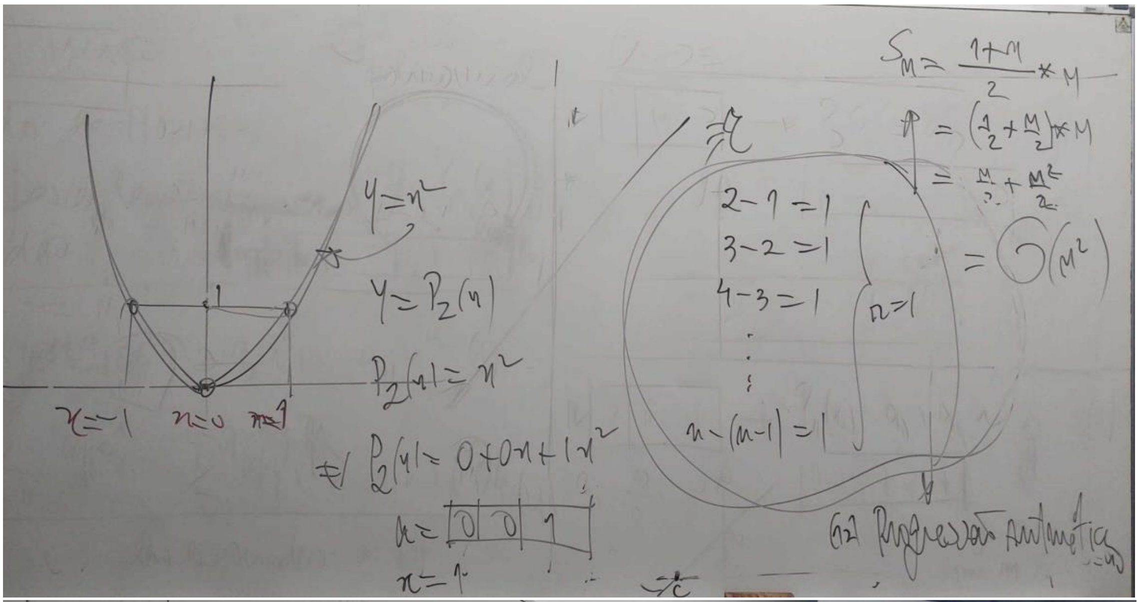
$n \leftarrow \text{length}(a)$

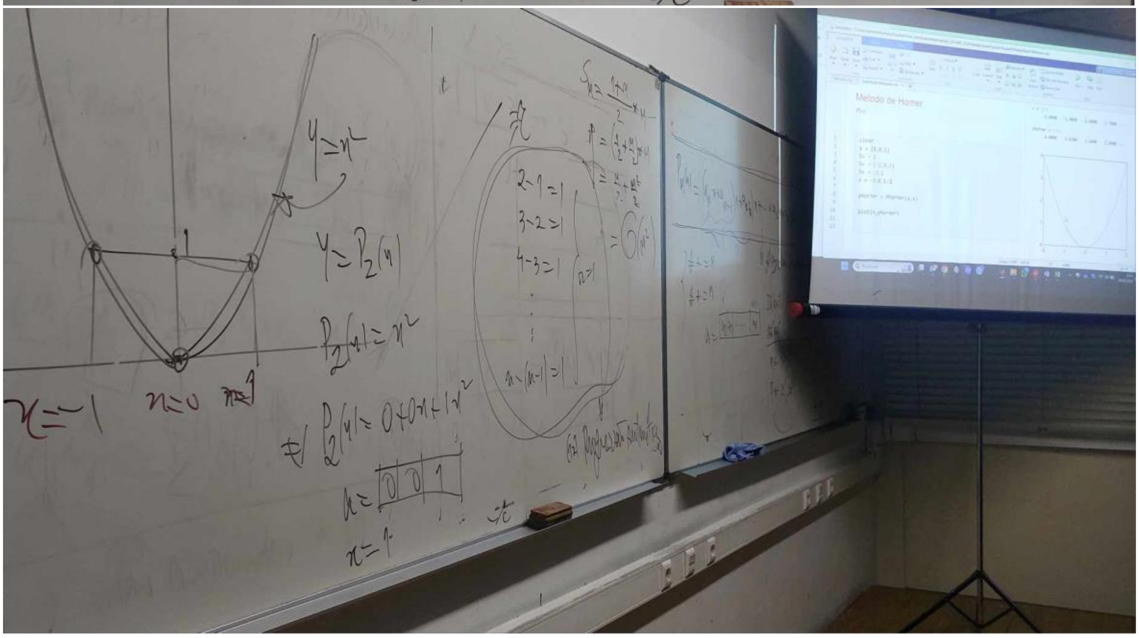
$P \leftarrow a(\text{end})$

Para $i = n-1$ até 1

$\quad P \leftarrow P * x + a(i)$

Fim Para





MHorner.m Interface01MHorner.mlx

```
function P = MHorner(a,x)
%UNTITLED4 Summary of this function goes here
%   Detailed explanation goes here
n = length(a);
P = a(end);
for i=n-1:-1:1
    P = P.*x+a(i);
end
end
```

MHorner.m Interface01MHorner.mlx

Método de Horner

$P(x) = x^2$

$P(x) = 0 + 0x + 1x^2$

```
clear
a = [0,0,1]
%x = 1
%x = [-1,0,1]
%x = -2:2
x = -2:0.1:2

yHorner = MHorner(a,x)

plot(x,yHorner)
```

```
x = 1×41
   -2.0000   -1.9000   -1.8000   -1.7000 ...

yHorner = 1×41
    4.0000    3.6100    3.2400    2.8900 ...
```