Algoritmos numéricos - P2:
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1- Lagrange

x	1,5	3	4
$p(x)$	12,5	89	195

2- Splines Cúbicas

x	$f(x)$
5	-0,878171
6	-1,646176
8	5,716707
10	-5,990268
12	131,655626
14	136,026834
16	-21,872897
17	-18,488907
19	9,1432758
20	5,9173397
22	-1,8895449
23	-0,9522272

3- Simpson 1/3:

1

$$= 0{,}75 \int_0^1 \int_0^1 e^{\left(-\frac{(9x_1-2)^2}{4} - \frac{(9x_2-2)^2}{4}\right)} dx_1\, dx_2 \qquad e^{(b-a)} = e^{b} \cdot e^{-a}$$

$$= 0{,}75 \int_0^1 e^{\left(-\frac{(9x_2-2)^2}{4}\right)} dx_2 \cdot \int_0^1 e^{\left(-\frac{(9x_1-2)^2}{4}\right)} dx_1$$

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(2)

$$0{,}75 \int_0^1\int_0^1 e^{\left(-\frac{(9x_1+1)^2}{49} - \frac{9x_2+1}{10}\right)} dx_1 dx_2$$

$$= 0{,}75 \int_0^1 e^{\left(-\frac{9x_2+1}{10}\right)} dx_2 \int_0^1 e^{\left(-\frac{(9x_1+1)^2}{49}\right)} dx_1$$

(3)

$$0{,}5 \cdot \int_0^1\int_0^1 e^{\left(-\frac{(9x_1-7)^2}{4} - \frac{(9x_2-3)^2}{4}\right)}$$

$$= 0{,}5 \cdot \int_0^1 e^{\left(-\frac{(9x_2-3)^2}{4}\right)} dx_2 \cdot \int_0^1 e^{\left(-\frac{(9x_1-7)^2}{4}\right)} dx_1$$

(4)

$$-0{,}2 \int_0^1\int_0^1 e^{\left(-(9x_1-4)^2 - (9x_2^2-7)^2\right)} dx_1 dx_2$$

$$= -0{,}2 \int_0^1 e^{\left(-(9x_2-7)^2\right)} dx_2 \int_0^1 e^{\left(-(9x_1-4)^2\right)} dx_1$$

Volume: $-1{,}46766 \cdot 10^{29}$ //

4ª Questão)

$A x = b \quad \cdot A^{-1}$

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2º Grau: $0,50518 - 0,11454x - 0,76595x^2$

3º grau:

$$y = 3,270610843 - 44,05407716x + 115,0600916x^2 - 76,81756239x^3$$

5ª Questão)

$x_1 = 7,492477892$

$x_2 = -0,4482552283$

$x_3 = 9,368257625$

$x_4 = 8,165251034$

6ª Questão)

Usando $u(t) = 2t + 8e^{(-0,5t)}$

$u(1) = 6,852245278$

Usando RK 4ª ordem:

$h = 0,1$: $u(1) = 6,852245409$

$h = 0,01$: $u(1) = 6,905866602$

$h = 0,001$: $u(1) = 6,852245278$