Zad. 11 / Zestaw 3 Kinga Kondraciuk

$$f = \int_{-0,1}^{0,1} x \cdot \frac{1}{\sin((x+0,5)^2)} \cdot e^{(12x)}\, dx$$

$a = -0,1$

$b = 0,1$

$$I(f) = \int_a^b f(x)\, dx = \int_{-1}^{1} f\left(\frac{b-a}{2}t + \frac{b+a}{2}\right) \cdot \frac{b-a}{2}\, dt =$$

$$= \frac{b-a}{2} \int_{-1}^{1} f\left(\frac{b-a}{2}t + \frac{b+a}{2}\right) dt \cong$$

$$\cong \frac{b-a}{2} \sum_{k=0}^{n} A_k f\left(\frac{b-a}{2}t_k + \frac{b+a}{2}\right) = S(f)$$

$n = 1$

$t_0 = -0,5774$ $t_1 = 0,5774$

$A_0 = A_1 = 1$

$h = 0{,}25$

$y_{1,0} = 240$

$y_{2,0} = 0$

$y_{1,1} = 2400 + 0{,}25 \cdot 240 = 460$

$y_{2,1} = 80 + 0{,}25 \cdot 0 = 80$

~~$y_{1,2} =$~~

~~$y_{2,2} =$~~

$f_1(460,80) = 1 \cdot 460 - 0{,}005 \cdot 460 \cdot 80 = ~~460~~ 276$

$f_2(460,80) = -1 \cdot 80 + 0{,}0025 \cdot 460 \cdot 80 = 12$

$y_{1,2} = 460 + 0{,}25 \cdot 276 = 529$

$y_{2,2} = 80 + 0{,}25 \cdot 12 = 83$

x_i	0	0,25	0,5
$y_{1,i}$	400	460	529
$y_{2,i}$	80	80	83