Кладковой Максим 5130904/30002 Вар 47

$f(x) = \sin(\pi x)$; $x \in \left[-\frac{1}{4}, \frac{1}{4}\right]$; $n = 3$; $x_0 = -\frac{1}{4}$

x_0	$f\big\|_{x=x_0}$	$\frac{df}{dx}\big\|_{x=x_0}$	$\frac{d^2f}{dx}\big\|_{x=x_0}$	$\frac{d^3f}{dx}\big\|_{x=x_0}$
$-\frac{1}{4}$	$-\frac{\sqrt{2}}{2}$	$\frac{\pi\sqrt{2}}{2}$	$\frac{\pi^2\sqrt{2}}{2}$	$-\frac{\pi^3\sqrt{2}}{2}$

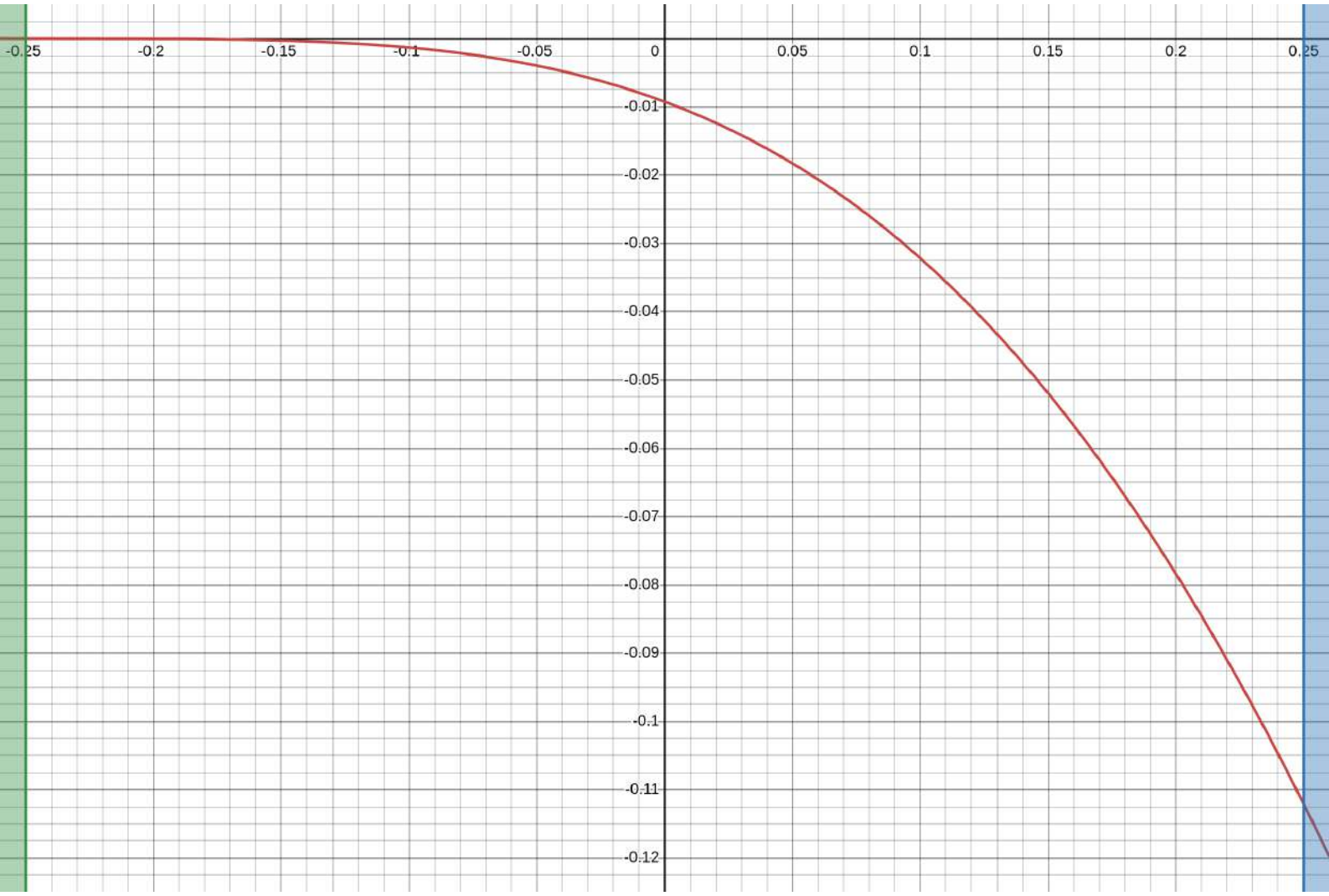
$$H_3(x) = f_0 + (x-x_0)\frac{f_0'}{1!} + (x-x_0)^2\frac{f''}{2!} + (x-x_0)^3\frac{f^{(3)}}{3!}$$

$$H_3(x) = -\frac{\sqrt{2}}{2} + \left(x+\frac{1}{4}\right)\frac{\pi\sqrt{2}}{2} + \left(x+\frac{1}{4}\right)^2\frac{\pi^2\sqrt{2}}{4} + \left(x+\frac{1}{4}\right)^3\frac{\pi^3\sqrt{2}}{12}$$

График погрешности:

$H_3(x) = T_3(x)$

$$r(x) = f(x) - T_3(x) = \sin(\pi x) - \frac{\sqrt{2}}{2} - \left(x+\frac{1}{4}\right)\frac{\pi\sqrt{2}}{2} + \left(x+\frac{1}{4}\right)^2\frac{\pi^2\sqrt{2}}{4} - \left(x+\frac{1}{4}\right)^3\frac{\pi^3\sqrt{2}}{12}$$


-0.25
-0.2
-0.15
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.1
-0.11
-0.12