$$f(x) = \frac{x^5 - 2{,}9x^3 + 6{,}5x^2 - 7x}{\cos(2x)}$$

$n = 3$

$a = 0, \quad b = \frac{\pi}{5}, \quad A = \frac{2}{3}$

(1) $N = 2$: $[a, b] \to [a, \frac{a+b}{2}] \cup [\frac{a+b}{2}, b]$

(2) $N = 4$: $[a, b] \to \ldots$

$$\int_{-1}^{1} f(x)dx = A\left(f\left(\frac{1}{\sqrt{2}}\right) + f(0) + f\left(-\frac{1}{\sqrt{2}}\right)\right)$$

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

$$= A\left(f\left(\frac{a+b}{2} + \frac{b-a}{2}\cdot\frac{1}{\sqrt{2}}\right) + f\left(\frac{a+b}{2}\right) + f\left(\frac{a+b}{2} - \frac{b-a}{2}\cdot\frac{1}{\sqrt{2}}\right)\right)$$

$$\int_0^{\frac{\pi}{5}} f(x)dx = \frac{2}{3}\cdot\frac{\pi}{10}\left(f(0{,}092) + f(0{,}314) + f(0{,}536)\right)$$

$$= \frac{2}{3}\cdot\left(-0{,}601 + (-2{,}019) + (-4{,}721)\right) \simeq$$

$$\simeq -4{,}804 \cdot \frac{\pi}{10} \simeq -1{,}538$$

(1) $N=2$, $[a,b] \Rightarrow [0, \frac{\pi}{10}] \cup [\frac{\pi}{10}, \frac{\pi}{5}]$

1) $\int_0^{\frac{\pi}{10}} f(x)dx = \frac{2}{3} \cdot \frac{\pi}{20} \cdot (f(0,268) + f(0,046) +$

$+ f(0,157)) =$

$= \frac{2}{3} \cdot \frac{\pi}{20} \cdot (-1,694 - 0,309 + -0,096) \approx$

$\approx -0,314$

2) $\int_{\frac{\pi}{10}}^{\frac{\pi}{5}} f(x)dx = \frac{2}{3} \cdot \frac{\pi}{20} (f(0,582) + f(0,36) +$

$+ f(0,471)) =$

$= \frac{2}{3} \cdot \frac{\pi}{20} (-5,922 - 2,386 - 3,592) \approx$

$\approx -1,24617$

Ответ: $-0,314 - 1,246 \approx -1,560$

(2) $N=4$ $[a,b] \to [0, \frac{\pi}{20}] \cup [\frac{\pi}{20}, \frac{\pi}{10}] \cup$

$\cup [\frac{\pi}{10}, \frac{3\pi}{20}] \cup [\frac{3\pi}{20}, \frac{\pi}{5}]$

1) $\int_0^{\frac{\pi}{20}} f\,dx = \frac{2}{3}\frac{\pi}{40} \cdot (-0,857 - 0,158 - 0,517)$

$\approx -0,080$

2) $\int_{\frac{\pi}{20}}^{\frac{\pi}{10}} f\,dx = \frac{2}{3}\frac{\pi}{40} \cdot (-1,854 - 1,136 - 1,481)$

$\approx -0,234$

3) $\int_{\frac{\pi}{10}}^{\frac{3\pi}{20}} f\,dx = \frac{2}{3}\frac{\pi}{40} \cdot (-3,291 - 2,198 -$

$- 2,683) =$

$= -0,428$

4) $\int_{\frac{3\pi}{20}}^{\frac{\pi}{5}} f\,dx = \frac{2}{3} \cdot \frac{\pi}{40} (-6,756 - 3,942 -$

$- 5,034) = -0,823$

Ответ: -1,565

Корректный ответ: -1,582

Точность вычислений: 10^{-2}