

i	0	1	2	3	4	5
x_i	y_i	Δy_i	$\Delta^2 y_i$	$\Delta^3 y_i$	$\Delta^4 y_i$	$\Delta^5 y_i$
3,5	33,1154	3,4828	0,3663	0,0385	0,004	0,0008
3,6	36,5982	3,491	0,4048	0,0425	0,0048	
3,7	40,4473	4,2539	0,4473	0,0473		
3,8	44,7012	4,7012	0,4946			
3,9	49,4024	5,1358				
4	54,5982					

$$x \in (3,522; 3,905)$$

$$h = 0,1$$

$$q = \frac{x - x_0}{h} = \frac{3,522 - 3,5}{0,1} = 0,22$$

$$x = 3,522 \quad x_0 = 3,5$$

$$x_n = x_5 = 4$$

$$q = \frac{x - x_n}{h} = \frac{3,905 - 4}{0,1} = -0,95$$

$$N_5(x) = y_0 + q \Delta y_0 + \frac{q(q-1)}{2!} \Delta^2 y_0 + \frac{q(q-1)(q-2)}{3!} \Delta^3 y_0 + \frac{q(q-1)(q-2)(q-3)}{4!} \Delta^4 y_0 + \frac{q(q-1)(q-2)(q-3)(q-4)}{5!} \Delta^5 y_0$$

$$f(3,522) = N(3,522) = 33,1154 + 0,1 \cdot 3,4828 + \frac{0,22(0,22-1)}{2 \cdot 1} \cdot 0,3663 + \frac{0,22(0,22-1)(0,22-2)}{4 \cdot 3 \cdot 2} \cdot 0,0385 + \frac{0,22(0,22-1)(0,22-2)(0,22-3)}{4 \cdot 3 \cdot 2} \cdot 0,004 + \frac{0,22(0,22-1)(0,22-2)(0,22-3)(0,22-4)}{5!} \cdot 0,0008$$

$$b = 0.000001 - 0.000003 - 0.000004$$

$$\frac{0.22(0.22-1)(0.22-2)(0.22-3)(0.22-4)}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} \cdot 0.000008 = 33.1154 + 0.34828$$

$$= 0.0858 \cdot 0.3663 + 0.00048 - 0.00014 + 0.000021 =$$

$$= 33.4326$$

$$\text{Для } x = 3.905$$

$$x_n = x_{524}$$

$$q = -0.95$$

2-я интерполяционная формула

$$N_5(x) = y_5 + q \Delta y_4 + \frac{q(q+1)}{2!} \Delta^2 y_3 + \frac{q(q+1)(q+2)}{3!} \Delta^3 y_2 +$$

$$+ \frac{q(q+1)(q+2)(q+3)}{4!} \Delta^4 y_1 + \frac{q(q+1)(q+2)(q+3)(q+4)}{5!} \Delta^5 y_0 =$$

$$f(3.905) = 54.5982 - 0.95 \cdot 9.1958 + \frac{-0.95(-0.95+1)}{2} \cdot 0.4996 +$$

$$+ \frac{-0.95(-0.95+1)(-0.95+2)}{3!} \cdot 0.0473 + \frac{-0.95(-0.95+1)(-0.95+2)(-0.95+3)}{4!} \cdot$$

$$\times 0.0048 + \frac{-0.95(-0.95+1)(-0.95+2)(-0.95+3)(-0.95+4)}{5!} \cdot 0.0008 =$$

$$= 54.5982 - 4.93601 - 0.01174 - 0.00039 - 0.00002 -$$

$$- 0.000002 = 49.65$$

$$f(3.522) = 33.4326$$

$$f(3.905) = 49.65$$