WIN03_S4_Aufg1

Mittwoch, 15. März 2023 14:42

$x = 3750$

$x_0 = 0$ $\quad x_2 = 5000$

$x_1 = 2500$ $\quad x_3 = 10'000$

$$l_0(x) = \frac{(x-x_1)}{(x_0-x_1)} \cdot \frac{(x-x_2)}{(x_0-x_2)} \cdot \frac{(x-x_3)}{(x_0-x_3)} = \frac{3750-2500}{0-2500} \cdot \frac{3750-5000}{0-5000} \cdot \frac{3750-10'000}{0-10'000} = -0.078125$$

$$l_1(x) = \frac{(x-x_0)}{(x_1-x_0)} \cdot \frac{(x-x_2)}{(x_1-x_2)} \cdot \frac{(x-x_3)}{(x_1-x_3)} = \frac{3750-0}{2500-0} \cdot \frac{3750-5000}{2500-5000} \cdot \frac{3750-10'000}{2500-10'000} = 0.625$$

$$l_2(x) = \frac{(x-x_0)}{(x_2-x_0)} \cdot \frac{(x-x_1)}{(x_2-x_1)} \cdot \frac{(x-x_3)}{(x_2-x_3)} = \frac{3750-0}{5000-0} \cdot \frac{3750-2500}{5000-2500} \cdot \frac{3750-10000}{5000-10'000} = 0.46875$$

$$l_3(x) = \frac{(x-x_0)}{(x_3-x_0)} \cdot \frac{(x-x_1)}{(x_3-x_1)} \cdot \frac{(x-x_2)}{(x_3-x_2)} = \frac{3750-0}{10'000-0} \cdot \frac{3750-2500}{10'000-2500} \cdot \frac{3750-5000}{10'000-5000} = -0.015625$$

$$P_3(x) = y_0 \cdot l_0 + y_1 \cdot l_1 + y_2 \cdot l_2 + y_3 \cdot l_3$$

$$= 1013 \cdot -0.078125 + 747 \cdot 0.625 + 590 \cdot 0.46875 + 226 \cdot -0.015625 = \underline{637.328125}$$