Task:

If f = (1, 2), (2, 3), (3, 4), (4, 5), g = (1, -2), (3, -3), (5, -5), h = (1, 0), (2, 1), (3, 2),

find the following and state the domain

2a. f + g

2b. f - g

2c. f · g

Solution:

If f and g are functions and (x,y) are some points of these functions, then we can conclude that

$f(x) = x + 1$

Using a simple method of multivariate interpolation (nearest-neighbor interpolation)

$g(x) = -0.125x^2 - 3.1755711 \cdot 10^{-17}x - 1.875$

Answer:

2a. $f(x) + g(x) = x + 1 - 0.125x^2 - 3.1755711 \cdot 10^{-17}x - 1.875 =$

$= -0.125x^2 - (3.1755711 \cdot 10^{-17} - 1)x + 0.875 \approx$

$\approx -0.125x^2 + x + 0.875$

2b. $f(x) - g(x) = x + 1 + 0.125x^2 + 3.1755711 \cdot 10^{-17}x + 1.875 =$

$= 0.125x^2 + (3.1755711 \cdot 10^{-17} + 1)x + 2.875 \approx$

$\approx 0.125x^2 + x + 2.875$

2c. $f(x) \cdot g(x) = (-0.125x^2 - 3.1755711 \cdot 10^{-17}x - 1.875)(x + 1) =$

$\approx -0.125x^3 - 0.125x^2 - 1.875x - 1.875$