Laboratory Work 7

Exercise 1:

1. Define symbolic variables **u**, **v** and form the expression **(u + v)^2**.

2. Evaluate the expression **x^2 + 2*x + 1** for **x = -1**.

3. Simplify the expression **(x + 1)^2 - x^2 - 2*x - 1**.

Exercise 2:

1. Expand the expression **(x - 3)^2 * (x + 2)**.

2. Create a symbolic function **g(x) = x^4 - 2*x^2 + 1** and compute **g(1)** and **g(-1)**.

3. Replace **y** with **2*x** in the expression x + y^2.

Exercise 3:

1. Compute the first and second derivatives of **f(x) = x^3 - 4*x + 6**.

2. Find the partial derivatives of **f(x, y) = x*y^2 + log(x)**.

3. Evaluate the definite integral of **f(x) = 1/(1 + x^2)** from **0** to **1**.

Exercise 4:

1. Compute the 4th-order Taylor expansion of **cos(x)** around **x = 0**.

2. Compute the 5th-order Taylor series of **exp(x)** around **0** .