

NOTE: When the problem says 'outputs the value of,', this means that the value should be returned as an output variable from the function, not that the function should display the value on the screen.

- 1) (2 pts) Write a MATLAB function that will take an integer n as input and outputs the value of $n!$.
- 2) (3 pts) Write a MATLAB function that will take integers n and k as input and outputs the value of the binomial coefficient

$$C(n, k) = \binom{n}{k} = \frac{n!}{k!(n-k)!}, \quad n \geq k$$

This function should make use of the function you wrote in Question 1.

- 3) (5 pts) Write a function that will take the values of the double precision numbers a and b along with the integer n as input and will output the value of

$$(a + b)^n = \sum_{k=0}^n \binom{n}{k} a^k b^{n-k}.$$

Your function should compute this using the right side of the formula and should make use of the functions you wrote in the first two questions.