Hierarchy of (Elementary) Functions

1. POLYNOMIAL FUNCTION (OF DEGREE n):

   $p_n = a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x + a_0 \ (a_n \neq 0);$

2. RATIONAL FUNCTION: $Q(x) = \dfrac{p_n}{q_m} = \dfrac{a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x + a_0}{b_m x^m + b_{m-1} x^{m-1} + \ldots + b_1 x + b_0};$

3. EXPONENTIAL FUNCTION: $f(x) = a^x \quad (1 \neq a > 0);$

4. (NATURAL) LOGARITHMIC FUNCTION: $f(x) = \ln x;$

5. TRIGONOMETRIC FUNCTIONS:

   $\sin x, \cos x, \tan x, \sec x, \csc x, \cot x;$

6. HYPERBOLIC FUNCTIONS:

   $\sinh x, \cosh x, \tanh x, \operatorname{sec} hx, \operatorname{csc} hx, \coth x;$

7. INVERSE TRIGONOMETRIC FUNCTIONS;

8. INVERSE HYPERBOLIC FUNCTIONS.