

# FUNCTION AS ONE OF THE FUNDAMENTAL CONCEPTS AT SECONDARY SCHOOL MATHEMATICS

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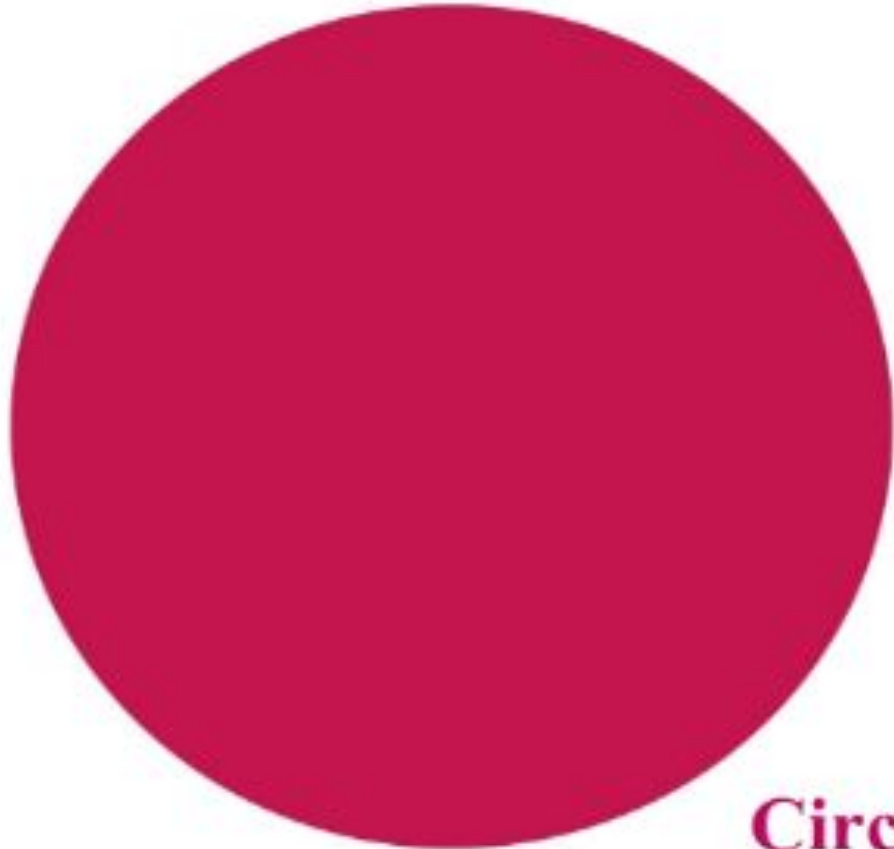
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**Supervisor:** Svetlana Gertsen

Tyumen, 2022



# Interesting Facts



Circle





# Purpose

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- **to investigate the role and place of function at secondary school mathematics**



# Tasks

- **the concept of function**
- **function types**
- **pedagogical recommendations for the study of functions in school mathematics course**



# Problem



**V.S.  
Vladimirov  
(1923-2012)**



**L.S.  
Pontryagin  
(1908-1988)**



**A. N. Tikhonov  
(1947-2016)**



# Reasons

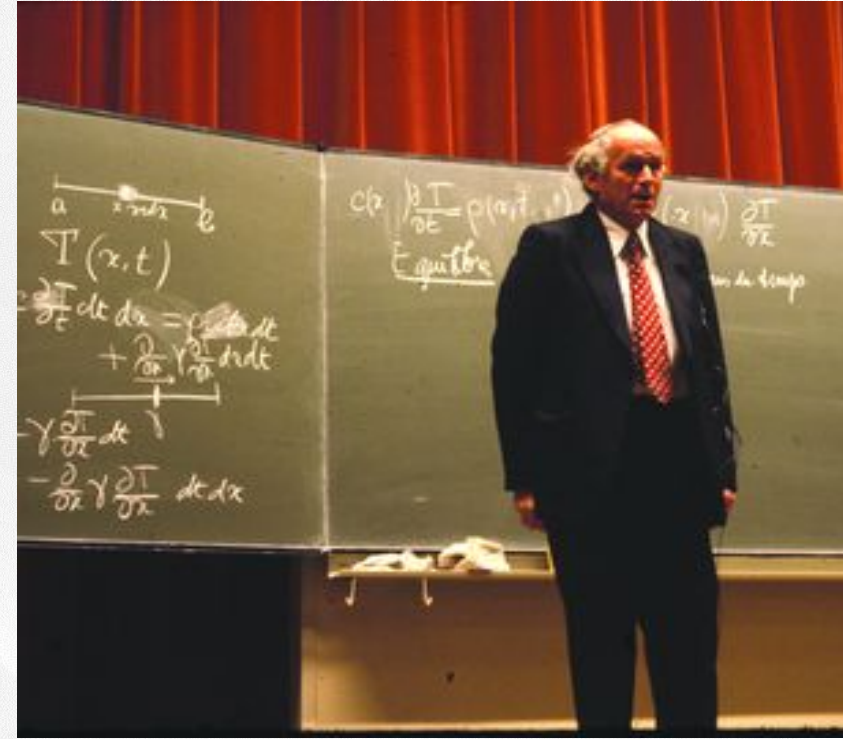
- the absence of interest among schoolchildren to the subject and the study of functions in particular
- the study of every new type of function, the properties of the function, in fact, without connection with the previous one
- the gap between the computational and functional-graphic skills of students



# Definition of Function



**Gottfried Wilhelm Leibniz**  
**(1646-1716)**

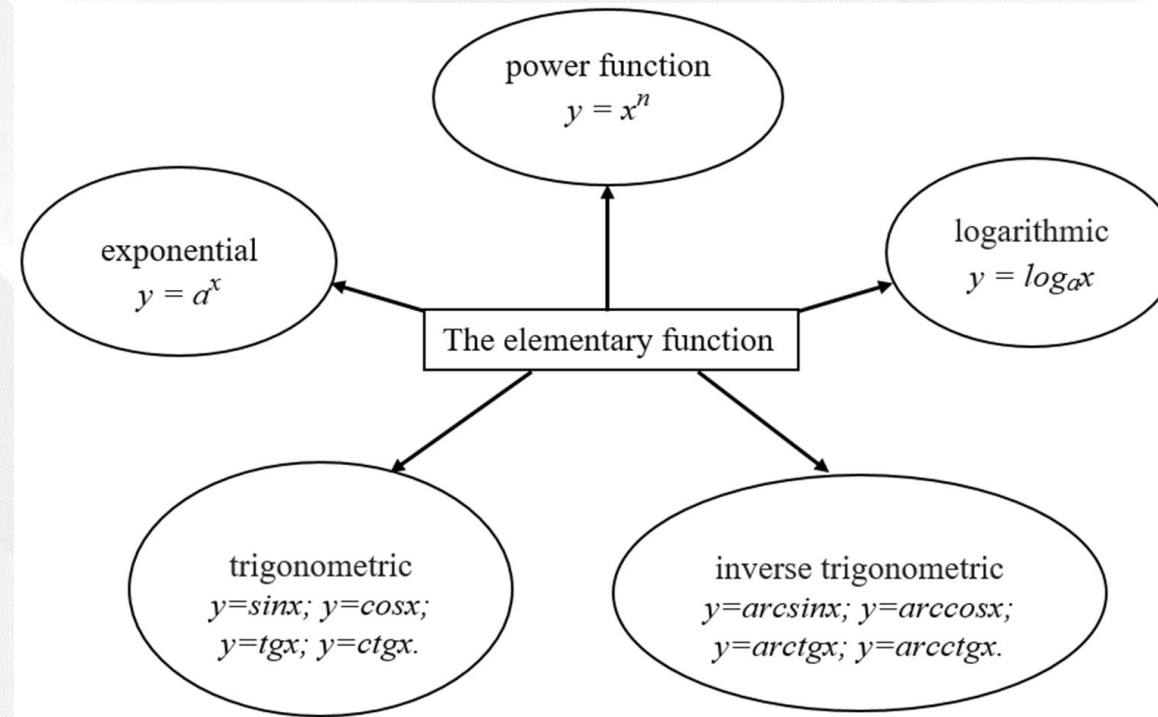


**Laurent-Moise Schwartz**  
**(1915-2002)**



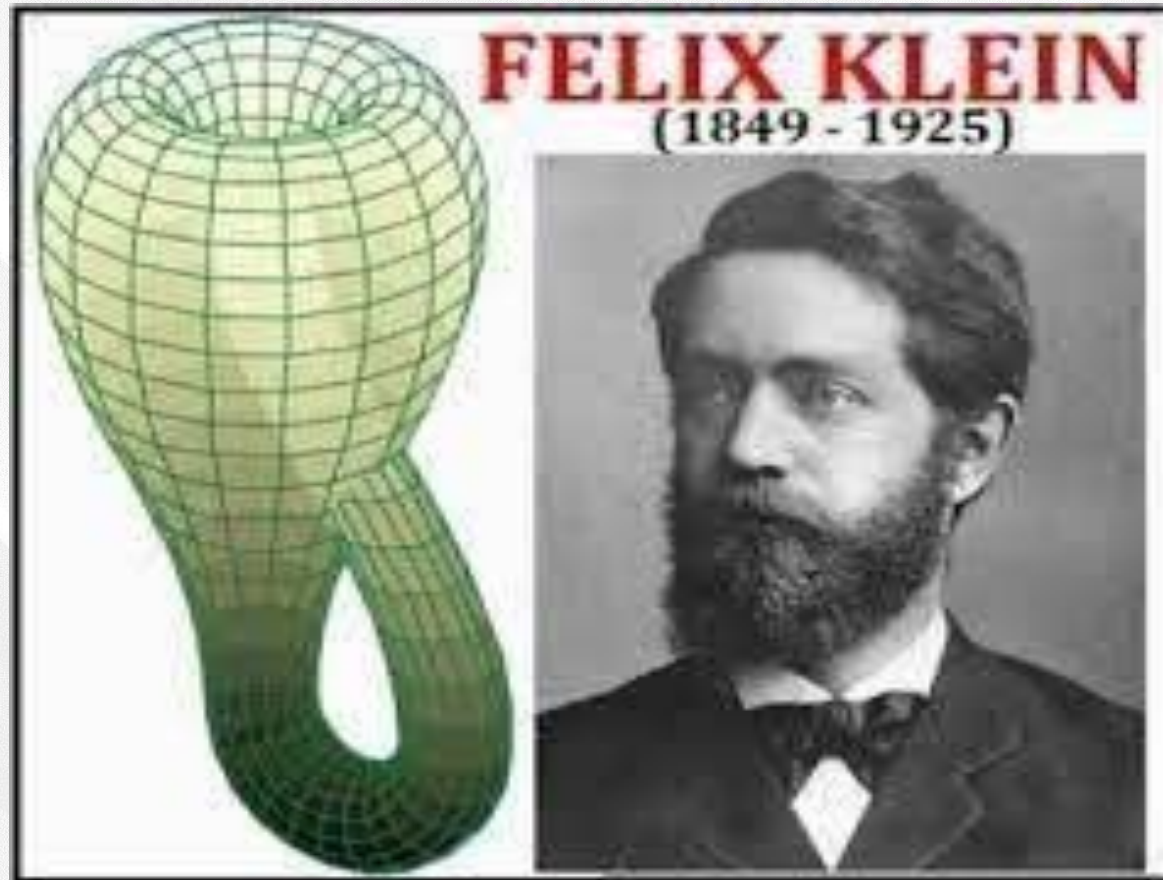
# Function Types

- **elementary:**  $y = f(x)$
- **non-elementary:**  $y(x) = \begin{cases} 0, & \text{if } x - \text{irrational number,} \\ 1, & \text{if } x - \text{rational number} \end{cases}$





# The Pedagogical Recommendation



- Concept of function should be a leading role at school mathematics course

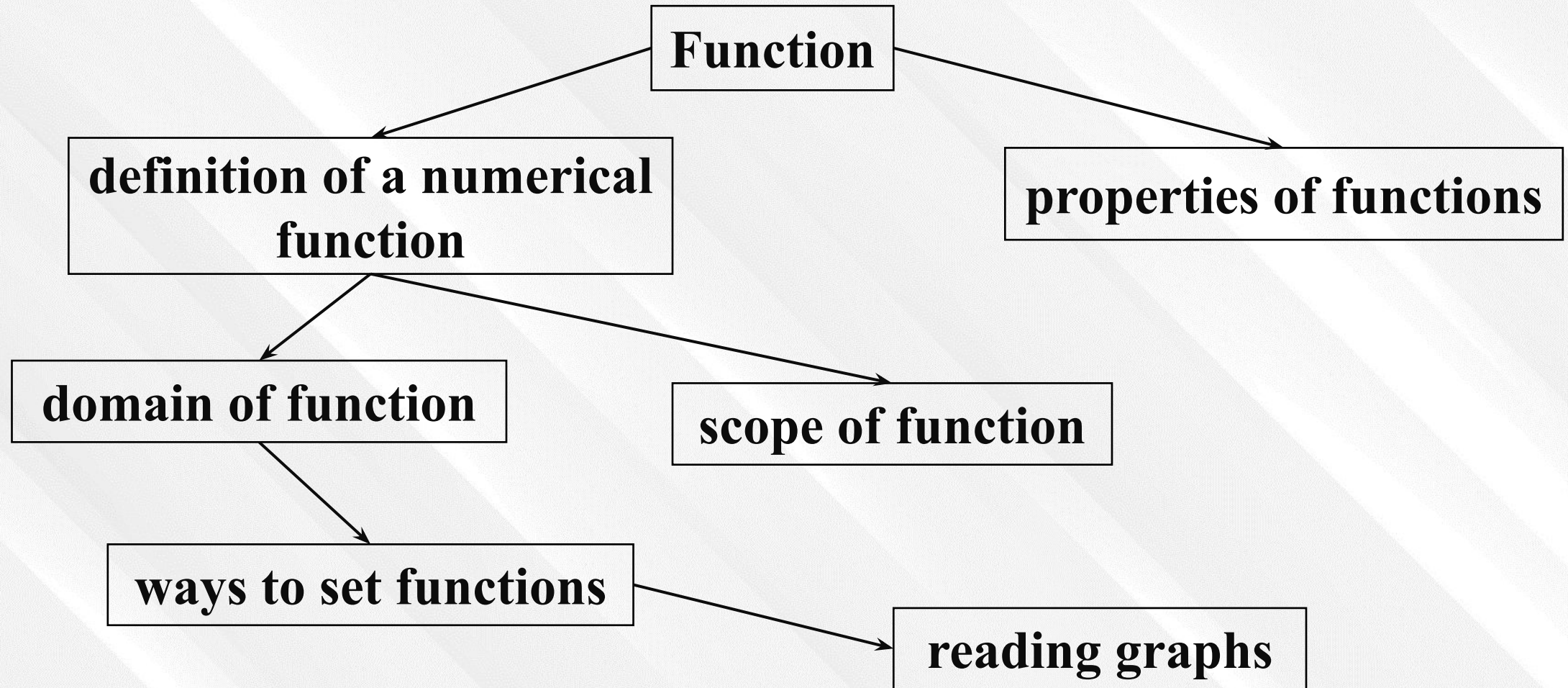


# The definition of Function

Merzlyak A.G. Algebra. 7 grade	Mordkovich A.G. Algebra. 9 grade
<ul style="list-style-type: none"><li>• The rule by which, for each value of the independent variable, one can find the only value of the dependent variable is called a function, and the corresponding dependence of one variable on another is called a functional. Denoted as <math>y=f(x)</math>.</li></ul>	<ul style="list-style-type: none"><li>• If a numerical set <math>X</math> and a rule <math>f</math> are given that allow each element <math>x</math> from the set <math>X</math> to be associated with a certain number <math>y</math>, then we say that a function <math>y=f(x)</math> with domain <math>X</math> is given; write <math>y=f(x)</math>, <math>x \in X</math>.</li></ul>



# The Concept of Function





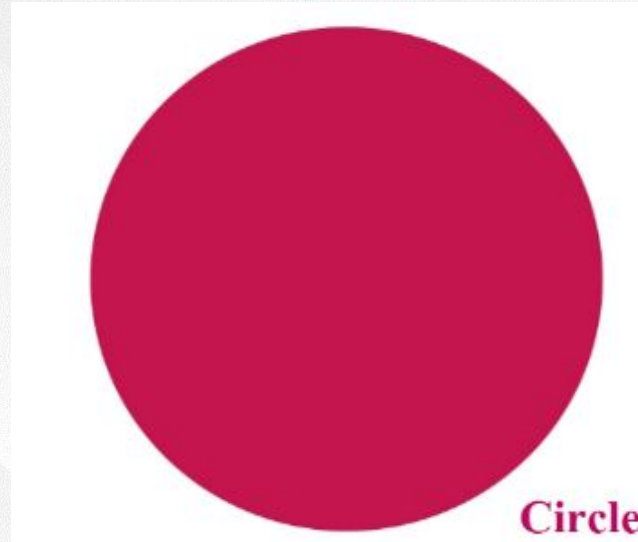
# Conclusion

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- **the main task of the teacher is to form the concept of function in each student's mind**

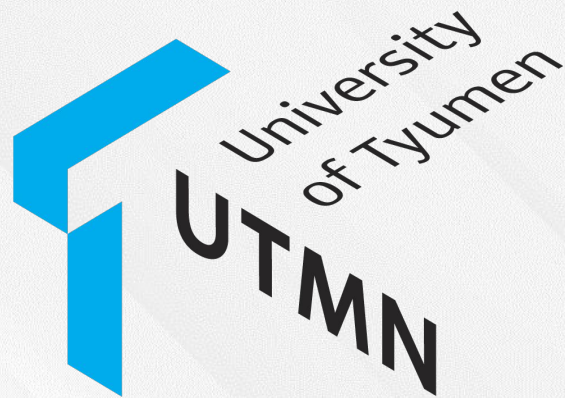


# Interesting Facts



- The answer: for figures with the same perimeters, the area will be larger for the figure with the smallest angle. Perimeter is the sum of the lengths of all sides of a figure





THANK YOU FOR YOUR ATTENTION

