RESEARCH ON THE APPLICATION OF MATHEMATICAL THINKING METHODS IN THE CONTEXT OF "DOUBLE REDUCTION"

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ABSTRACT

The "double reduction" policy is an educational policy proposed by the State to ensure the healthy physical and mental development of students. Its aim is to reduce the burden of homework and extra-curricular training on students, so that they can re-experience the joy of learning and achieve personal growth and all-round development. Improving classroom efficiency is an effective means of implementing the "double reduction" policy. The application of common mathematical thinking methods in teaching, such as observation and experimentation, analogy and conjecture, analysis and synthesis, abstraction and generalisation, induction and deduction, comparison and classification, specialisation and generalisation, can improve the quality of students' mathematical thinking and learning efficiency, and implement the "double reduction" policy in practice.

Keywords: Double reduction, Mathematical thinking methods, Application.

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INTRODUCTION

With the deepening of educational reform in our country, a variety of educational problems have emerged. Students' innovative ability, practical ability and comprehensive quality need to be improved; students are overburdened with schoolwork, their physical quality is generally declining, too few courses are offered in music, physical education, aesthetics and labor, and the students cultivated cannot well meet the standards required by the socialist construction of the new era for composite talents; the distribution of social teaching resources is unreasonable, and excellent teaching resources are concentrated in economically developed cities and key schools; extracurricular tutoring institutions are proliferating, causing students' learning anxiety and parents' educational worries, which greatly increases parents' mental and economic burdens. Under the educational concept of Lide Shuren, on July 24, 2021, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the document "Opinions on Further Reducing the Burden of Homework and Off-Campus Training for Students in Compulsory Education". The main elements of the "double reduction" policy are: comprehensively reduce the total amount and length of homework, improve the homework management mechanism, reasonably regulate the structure of homework, improve the quality of homework design, and strengthen homework completion guidance; improve the level of after-school services in schools, meet the diversified needs of students, improve the quality of after-school services, and strengthen and improve free online learning services; adhere to strict governance, and comprehensively regulate the behavior of out-of-school training; vigorously improve the quality of education and teaching, ensure that

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students learn enough and well in school, and teach strictly according to curriculum standards at zero starting point[1]. The "double reduction" policy can reduce students' learning pressure and improve students' learning efficiency and interest in learning. As can be seen from the above document, to strengthen the main role of school education and deepen the governance of off-campus training institutions, we must focus on improving the quality of school education and teaching, improving the level of classroom education and teaching, and ensuring that students complete their learning tasks in school in a comprehensive and high-quality manner. In such a context, enabling students to master learning methods, enhancing their ability to identify, ask, analyze and solve problems, and improving the quality of their mathematical thinking and learning efficiency becomes an issue worth exploring in depth. The application of mathematical thinking methods as one of the contents of mathematical culture is an effective means to solve the above problems.

MATHEMATICAL THINKING METHODS

Mathematical Thinking

Mathematical thinking is the process of rational understanding of mathematical objects by the human brain and is a reflection of the essential properties of the mathematical subject and the relationship between mathematical objects [2]. Mathematical thinking is used by students to learn mathematics and solve mathematical problems. Mathematical thinking is the task of knowing mathematical objects, using numbers and shapes as objects of thinking, mathematical language and symbols as a carrier of thinking, and to recognize and discover mathematical laws as a kind of thinking.

Mathematical Thinking Quality

Mathematical thinking quality is an important criterion for evaluating and measuring students' thinking about mathematical knowledge[2]. This individual difference actually reflects the differences in students' abilities. The fundamental purpose of "intelligence" in our teaching is to improve the quality of students' mathematical thinking, so that students can think in the process of learning mathematical knowledge, and continuously improve the quality of our talent training. The profundity of mathematical thinking refers to the ability to discover and reveal the essence of mathematical knowledge, which is reflected in the ability to gain insight into the essence of mathematical problems and the interconnection of each knowledge content, to reveal the hidden substance of the problems from the surface of the mathematical knowledge studied, and to identify the types of mathematical problems and mathematical models. The breadth of mathematical thinking refers to the ability to observe problems from multiple angles, to think about problems from multiple levels and paths, to think about mathematical problems from all angles, to find out the connections between mathematical knowledge and multiple ways of solving problems, and then to extend the methods of solving problems to similar problems, and to sublimate from the special to the general to mathematical methods with universal significance. The flexibility of mathematical thinking refers to the degree of flexibility of thinking activities, it is reflected in the study of mathematical problems do not follow the rules, stick to the rules, in the study of mathematical problems known conditions change or solve the problem of the microscopic path encountered difficulties, can quickly get rid of mathematical thinking inertia, find new ways to solve the problem. The agility of mathematical thinking refers to the process of mathematical thinking conciseness and rapidity. The criticality of mathematical thinking refers to the intellectual quality of mathematical thinking activities, which is the result of self-awareness and the ability to examine and reflect on the thinking process in a strict and detailed manner. It is the result of self-awareness. It is reflected in the ability to self-monitor, to identify whether one's approach to solving mathematical problems is correct or appropriate, to think independently, to ask questions and to question. The originality of mathematical thinking refers to the creative spirit of mathematical thinking activities, it is the intellectual quality shown in the innovative solution of mathematical problems, which is reflected in the student's ability to independently and consciously master the discovery of mathematical problems and can uniquely explore the solution [2].

General Methods Of Mathematical Thinking

The general method of mathematical thinking refers to the basic method often used in the process of mathematical thinking. Mathematical thinking methods are divided into mathematical empirical thinking methods and mathematical logical thinking methods, also known as the thinking method of mathematical discovery and the thinking method of mathematical demonstration [2]. The thinking method of mathematical discovery includes observation and experiment, analogy and conjecture, abstraction and generalization, comparison and classification, incomplete induction, etc. It is particularly prominent in the process of discovering mathematical knowledge; the thinking method of mathematical demonstration includes analysis and synthesis, special It is particularly prominent in the process of reasoning and argumentation of mathematical knowledge. In particular, the thinking method of mathematical discovery includes non-logical thinking factors such as guessing, imagination and intuition, which can make mathematical knowledge closer to life, make the mathematical learning process full of passion and liveliness, improve students' interest and enthusiasm in learning, and comprehensively improve students' emotion, attitude and value level comprehensively.

THE NECESSITY OF IMPLEMENTING THE "DOUBLE REDUCTION" POLICY

Before the implementation of the "double reduction" policy, in order to pursue the rate of admission, the school did not pay attention to the educating function of education in teaching, and could not make good use of mathematical knowledge to educate students on morality and education; there was subject-basedism in teaching, and knowledge was emphasized. Teaching ignores the method process and the cultivation of scientific research methods; ignores the cultivation of students' innovative ability and practical ability; schools and families regard student achievement as the ultimate goal of teaching. In order to improve students' academic performance, teachers adopt the indoctrination teaching mode in the classroom to mechanically instill mathematical knowledge and problem-solving methods into students. The quality and efficiency of classroom teaching needs to be improved. A lot of homework is assigned to students after class, and students have a heavy learning burden. Teachers and parents strictly control students' learning, especially parents pin their young ideals and family hopes on their children. In addition to allowing children to complete heavy learning tasks in school, they also allow students to participate in different types of social activities. Training institutions participate in various remedial classes. Students' daily life is rushing between school and various cram schools, and there is not enough time to develop personal hobbies and try to do what they like. Music, physical education, aesthetic education, labor and psychology courses are seriously lacking, the physical quality of students is seriously declining, and the overall quality needs to be improved. It is difficult for students and parents to bear the overloaded academic burden for a long time, there are certain psychological problems, learning anxiety, and lack of initiative and interest in learning. This situation is not conducive to cultivating socialist builders and successors with innovative spirit and practical ability, and all-round development of morality, intelligence, physique, beauty and labor. At the same time, the distribution of social and educational resources is unreasonable, and high-quality educational resources are concentrated in economically developed areas, especially urban and densely populated areas. Every family is faced with the problem of children's school choice and school district housing, plus participation in various off-campus remedial classes Studying, every family is faced with huge financial pressure, causing the family to make ends meet. In order to provide their children with better learning conditions, some parents choose to go out to work. The regional migration of parents has brought certain social problems, affecting the harmonious development of society and reducing the happiness index of people's lives. The proposal and implementation of the "Double Reduction" policy reflects the country's high importance to the current education cause. The introduction of this policy can effectively reduce the pressure of tutoring and homework for students, so that students can re-experience the fun of learning and have more after-school hours. Time to develop personality, to achieve students' personality growth and all-round development. It can rationally allocate the educational resources of the society and improve the management and security capabilities of the educational administrative department. Reduce the economic burden of the family and improve the happiness index of the people's lives. Therefore, it is very necessary to implement the policy of "Opinions on Further Reducing Students' Homework Burden and Off-campus Training Burden in Compulsory Education" [3].

THE APPLICATION OF MATHEMATICAL THINKING METHODS IN TEACHING IN THE CONTEXT OF DOUBLE REDUCTION

The "double reduction" policy is to reduce the burden of homework and training for students, which is an educational policy proposed by the national education department to ensure the healthy physical and mental development of students. In order to implement the "double reduction" policy well, teachers should study and analyze the "double reduction" policy in depth, improve the efficiency of classroom teaching, let students complete their knowledge in the classroom with high quality, improve students' learning ability significantly, and let students master the learning The teachers should study and analyze the "double reduction" policy in depth, improve the efficiency of classroom teaching, let students complete the knowledge in class with high quality, improve students' learning ability significantly, and let students master the learning method. The goal is to free students from the heavy burden of homework and training and to give them more time to develop their own hobbies and interests[4]. Improving students' efficiency and learning ability in the classroom is one of the key tools for implementing the "double reduction" policy. The application of common mathematical thinking methods in teaching and learning can teach students how to think about mathematical knowledge and problems, and significantly improve their learning ability and mastery of problem solving in all aspects. The following is a discussion of the application of several common mathematical thinking methods as elements of mathematical culture in teaching, in order to well implement the "double reduction" policy, to achieve morality, to educate people for the Party and the country. Fully implement our country's educational goals and train more socialist builders and successors.

Observation And Experimentation

Observation and experimentation are the most intuitive, visual and concrete methods of problem identification and problem solving, and they play a prominent role in the process of mathematical research and mathematical progress. In order to improve the efficiency of mathematics classroom teaching, the teaching of mathematics should emphasize the teaching of this method of mathematical thinking in conjunction with specific mathematical content. Observation method refers to the method by which people study the nature and relationship of objective things according to their specific conditions of their objective existence to obtain empirical materials. Experimentation is a method of obtaining empirical material by using physical tools to study problems under the guidance of certain research purposes, ignoring secondary factors and emphasizing primary factors, and studying their internal laws [2]. The solution of mathematical problems and the development and progress of mathematical knowledge cannot be achieved without mathematical inspiration, which comes from experience. observation and experimental mathematical thinking methods can make the process of mathematical research and mathematical learning vibrant and lively, stimulating students' interest and confidence in learning; it can enable students to reproduce the process of discovering mathematical knowledge in their learning, allowing them to master mathematical knowledge and scientific research methods in a meaningful way; and at the same time generate new mathematical discoveries and innovations in the process of solving immediate mathematical problems. Therefore, observation and experimental mathematical thinking methods in mathematics teaching should become an important method for exploring and learning mathematics knowledge and an important way to carry out mathematics practice. As in proving this problem: $1\cdot\frac{1}{2^2}\cdot\frac{1}{3^3}\cdot\cdots\cdot\frac{1}{n^n}<\left(\frac{2}{n+1}\right)^{\frac{n(n+1)}{2}},(n\in N,n\neq 1)$, students can be guided to use observation and experimental mathematical thinking to solve the problem. First, carefully observe the characteristics of the proved inequality. The exponent on the right side $\frac{n(n+1)}{2}$ is the sum of n positive integers from 1 to n, and the left side is the product of n terms. the specific expansion $1+2+3+\cdots+n=\frac{n(n+1)}{2}$ is the product of terms, and then observe the left and right sides of the analytic formula, you will find that the number of terms of the analytical expression on the left $\frac{n(n+1)}{2}$ is exactly the exponent of the analytical expression on the right. Both sides open $\frac{n(n+1)}{2}$ powers will have $\sqrt[\frac{n(n+1)}{2}]{1\cdot\frac{1}{2^2}\cdot\frac{1}{3^3}\cdot\cdots\cdot\frac{1}{n^n}}<\frac{2}{n+1}$, further observation of the left-hand side of the new formula, found to be a geometric mean, and then use The geometric mean and the arithmetic mean can be used to carry out the experiment, and the desired result may be proved.

Proof: If $1\cdot\frac{1}{2^2}\cdot\frac{1}{3^3}\cdot\cdots\cdot\frac{1}{n^n}=1\cdot\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{3}\cdot\frac{1}{3}\cdot\frac{1}{3}\cdot\cdots\cdot\frac{1}{n}\cdot\frac{1}{n}\cdot\cdots\cdot\frac{1}{n}$, according to the relationship between geometric and arithmetic averages :

$$1\cdot\frac{1}{2^2}\cdot\frac{1}{3^3}\cdot\cdots\cdot\frac{1}{n^n}<\left[\left(1+\frac{1}{2}+\frac{1}{2}+\cdots+\frac{1}{n}+\frac{1}{n}+\cdots+\frac{1}{n}\right)\times\frac{1}{1+2+\cdots+n}\right]^{1+2+\cdots+n}$$

$$=\left[(1+1+\cdots+1)\times\frac{1}{1+2+\cdots n}\right]^{1+2+\cdots+n}=\left(\frac{n}{\frac{n(n+1)}{2}}\right)^{\frac{n(n+1)}{2}}=\left(\frac{2}{n+1}\right)^{\frac{n(n+1)}{2}}.$$

Analogy And Conjecture

Analogy and conjecture is a kind of intuitive thinking, a subconscious thinking activity that is easy to accept because of its directness. Analogy is a way of thinking in which, based on the fact that some properties of two mathematical objects are the same or similar, one guesses that some other properties may also be the same or similar. It is a way of thinking to find problems and solve them, and the similarity of the structure of two mathematical objects is the key to analogy [2]. Conjecture is often accompanied by the thinking process of analogy and induction, and there is a possibility that the conclusions obtained by analogy and induction are wrong, so the mathematical result of the conjecture should be logically proved or negated by giving a counterexample.

For exemple: $\frac{a+b}{2} \geq \sqrt{ab}, a>0, b>0$, if and only if $a=b$ equal sign established. Analogy and conjecture available : $\frac{a+b+c}{3} \geq \sqrt[3]{abc}, a>0, b>0, c>0$, the equal sign holds if and only if $a=b=c$.

Proof: $\left(\frac{a+b+c}{3}\right)^3 = \left(\frac{a+b}{2} + \frac{2c-a-b}{6}\right)^3 = \left(\frac{a+b}{2}\right)^3 + 3\left(\frac{a+b}{2}\right)^2\left(\frac{2c-a-b}{6}\right)$
$+3\left(\frac{a+b}{2}\right)\left(\frac{2c-a-b}{6}\right)^2 + \left(\frac{2c-a-b}{6}\right)^3 = \left(\frac{a+b}{2}\right)^2 c + \left(\frac{2c-a-b}{6}\right)^2\left(\frac{4a+4b+c}{3}\right)$
$\geq \left(\frac{a+b}{2}\right)^2 c \geq abc.$ then, $\frac{a+b+c}{3} \geq \sqrt[3]{abc}$, the equal sign holds if and only if $a=b=c$.

Induction And Deduction

Induction is a method of drawing general conclusions by analyzing and sorting out the special cases of mathematical problems. It is a special to general reasoning method, and the induction method is divided into complete induction and incomplete induction [2]. Because incomplete induction is only a general conclusion drawn from the investigation of individual cases of a certain type of mathematical problem, it is a plausible reasoning, which is not necessarily correct, and requires rigorous theoretical proof and testing. But it can find problems and inspire ideas, and it is a basic method of mathematical creative thinking. Deductive method is a method of inferring specific conclusions from general conclusions, that is, syllogisms. Deductive reasoning is the most commonly used form of reasoning in mathematical proofs, and it is an important means to improve students' logical thinking ability. As in Fermat conjecture, Numbers like $2^{2^n}+1\,(n \in N)$ are prime numbers. It was obtained by Fermat by incomplete mathematical induction, which was later denied by Euler by deduction, because Euler pointed out that the fifth Fermat number $2^{2^5}+1 = 641 \times 6700417$ is not a prime number.

Analysis And Synthesis

Analytical method refers to discussing the correctness of a certain mathematical proposition, and tracing the source step by step according to the conclusion, that is, the thinking method of grasping the result and the cause. The advantage of the analytical method is that the thinking is concentrated and the way to solve the problem is clear; the disadvantage is that the argumentation process is not easy to express. Synthetic method refers to discussing the correctness of a mathematical proposition, starting from known conditions to obtain results or generate new results through deductive reasoning, that is, the thinking method of obsessed with cause and effect [2]. The advantages of the comprehensive method are that the demonstration process is progressive, the logic is rigorous and easy to express; the disadvantage is that it is difficult to find the way to solve the problem. The synthesis method and the analysis method complement each other. The analysis method is the premise of the synthesis method. You have me and I have you inseparable. Analysis is for synthesis, and there is analysis in synthesis. More complex thinking processes require both analysis and analysis. comprehensive. In teaching, we use analytical methods when analyzing problems, and we use comprehensive methods when expressing problems.

Proof: If $a,b>0, a^2+4b^2=23ab$, then $2\lg\frac{a+2b}{3}=(\lg a+\lg 3b)$. The following proof is made using the analytical method, to make $2\lg\frac{a+2b}{3}=(\lg a+\lg 3b)$ established, $\lg\left(\frac{a+2b}{3}\right)^2=\lg 3ab$ should be established, $\left(\frac{a+2b}{3}\right)^2=3ab$ should be established, $(a+2b)^2=27a^2b^2$ should be established, $a^2+4a^2b^2+4b^2=27a^2b^2$ should be established, then $a^2+4b^2=23ab$ established, however $a^2+4b^2=23ab$ is a known condition, then the proposition can be proved. The following proof is made using the synthesis method. If $a^2+4b^2=23ab$, then $a^2+4a^2b^2+4b^2=27a^2b^2$, that is $(a+2b)^2=27a^2b^2$, futher we have $\left(\frac{a+2b}{3}\right)^2=3ab$, therefore $\lg\left(\frac{a+2b}{3}\right)^2=\lg 3ab$, then $2\lg\frac{a+2b}{3}=(\lg a+\lg 3b)$. Proof is complete.

Specialization And Generalization

Specialization is a method of thinking that transforms difficult-to-solve general mathematical problems into special forms, and reduces mathematical problems from the original scope to a small scope and individual situations. Generalization is a way of thinking to expand the mathematical problem of research from the original scope to a larger scope [2]. Specialization and generalization are complementary and dialectically unified. When solving mathematical problems, specialization is used to obtain general conclusions, and generalization is used to obtain special cases and generalized conclusions of mathematical problems by using general conclusions. Therefore, when a general mathematical problem is difficult to solve, it can be transformed into a special situation, and a new mathematical problem or a way to solve the problem can be obtained by retreating as an advance, and a new mathematical problem or a way to solve the problem; when the particular mathematical problem is difficult to solve, the The general situation of the problem is easy to solve, and it can be transformed into the general situation. In teaching, from the special to the general, from the general to the special, it is necessary to transform and use it flexibly according to specific problems.

For exemple: Judge $f(x)=x\left(\frac{1}{2^x-1}+\frac{1}{2}\right)$ parity [5]. Judging directly by the definition, the analytical collation is more complicated. Consider using $f(x)\pm f(-x)=0$ to judge, you need to choose one of these two formulas. According to the specificity, let $x=1$ then $f(1)-f(-1)=0$, so choose $f(x)-f(-x)=0$ to judge.

Proof: $f(x)-f(-x)=x\left(\frac{1}{2^x-1}+\frac{1}{2}\right)+x\left(\frac{1}{2^{-x}-1}+\frac{1}{2}\right)=x\left(\frac{1}{2^x-1}+\frac{1}{2^{-x}-1}+1\right)$

$=x\left(\frac{1}{2^x-1}+\frac{1}{2^{-x}-1}+1\right)=x\left(\frac{1}{2^x-1}+\frac{2^x}{1-2^x}+1\right)=x\left(\frac{1}{2^x-1}-\frac{2^x}{2^x-1}+1\right)=0$

Then $f(x)-f(-x)=0$, Because $f(x)$ domain of definition is the symmetric interval $(-\infty,0)\cup(0,+\infty)$, then $f(x)$ is an even function.

For exemple, $f(x)=\frac{x^2}{x^2+1}$, calculate : $f(2022)+f(\frac{1}{2022})+f(2023)+f(\frac{1}{2023})$. If the independent variables are directly substituted into the function expression to calculate the sum of the function values, the calculation amount will be very complicated. Consider generalization, try to calculate $f(x)+f(\frac{1}{x})$ result according to the target task, and then come up with the request succinctly.

Proof：If $f(x)+f(\frac{1}{x})=\frac{x^2}{x^2+1}+\frac{1}{x^2+1}=1$，

then $f(2022)+f(\frac{1}{2022})+f(2023)+f(\frac{1}{2023})=1+1=2$.

Abstraction And Generalization

Mathematical abstraction refers to a thinking method that discards the non-essential attributes of mathematical objects and extracts essential attributes to make them significantly different from other mathematical objects. Mathematical generalization refers to the application of general attributes extracted from mathematical objects to similar mathematical objects to form a thinking method of general understanding of such mathematical objects [2]. Abstraction is manifested in analyzing problems and refining essence in the actual thinking process, while generalization is manifested in induction and synthesis. The two are interdependent and inseparable. Without abstraction, the essential properties of mathematical objects cannot be discovered and generalizations cannot be produced; without generalizations, the essential properties of mathematical objects cannot be sublimated and have universal significance, and generalization is a development relative to abstraction. Only by perfect combination of abstraction and generalization can we discover the essential attributes contained in the surface of mathematical objects and improve the quality of students' mathematical thinking. For example, when explaining the monotonicity of the function, let the students observe the temperature change curve of a certain city on a certain day, guide the students to describe the intuitive phenomenon in mathematical language, and let the students consider which time range the temperature gradually increases with time, which time range The internal temperature gradually decreases with the increase of time, so that students can realize that mathematics comes from life, think about problems from their own experience, and then give a preliminary definition of function monotonicity and monotonic interval. Give $y=x$ and $y=x^2$ images again, let students observe further，for function $y=x$, any $x_1<x_2$ we have $f(x_1)<f(x_2)$, but for the function $y=x^2$， not any $x_1<x_2$ have $f(x_1)<f(x_2)$,but divided into two intervals, when $x<0$, any $x_1<x_2$ have $f(x_1)>f(x_2)$; when $x>0$, any $x_1<x_2$ have $f(x_1)<f(x_2)$. Let students go from intuition to abstraction, from special to general, and finally from perceptual to rational to obtain the concepts of function monotonicity and monotonic interval: In interval I，for function $y=f(x)$， arbitrary $x_1<x_2$ have $f(x_1)<f(x_2)$ （$f(x_1)>f(x_2)$），Then the function $y=f(x)$ is said to monotonically increase (decrease) in the interval *I*, *I* is called its monotonically increasing (decreasing) interval. In addition, the generation of function concept is also the crystallization of abstract and general thinking methods.

Comparison And Classification

Comparison is a method of thinking that compares different mathematical objects and their individual parts and characteristics to find out the commonalities, differences and relationships of the objects being compared. Analysis and synthesis are often used in the process of comparison, and human understanding of objective things is achieved in the process of comparison. Through comparison, students can grasp the essential properties of mathematical objects and prepare them for classification. Classification is a method of thinking that screens and categorizes mathematical objects by comparison and by the degree of similarity between them[2]. Mathematical classification has the division of concepts, the categorization of properties, the generalization of methods and the method of classification and discussion.

Proof: $\frac{|a+b|}{1+|a+b|} \le \frac{|a|}{1+|a|} + \frac{|b|}{1+|b|}$. Comparing the analytical expressions on both sides of the inequality, They all have the same structure as the expression $\frac{x}{1+x}$, compare $|a+b|$ and $|a|+|b|$: $|a+b| \le |a|+|b|$, consider introducing functions $f(x) = \frac{x}{1+x}, x \ge 0$, use the monotonicity of the function to prove.

Proof: Assume $f(x) = \frac{x}{1+x}, x \ge 0$, since $f'(x) = \frac{1}{(1+x)^2} \ge 0$, the function $f(x)$ obtained is a monotonically increasing function when $x \ge 0$. However $|a+b| \le |a|+|b|$, then $\frac{|a+b|}{1+|a+b|} \le \frac{|a|+|b|}{1+|a|+|b|}$, since $\frac{|a|+|b|}{1+|a|+|b|} = \frac{|a|}{1+|a|+|b|} + \frac{|b|}{1+|a|+|b|} \le \frac{|a|}{1+|a|} + \frac{|b|}{1+|b|}$, therefore $\frac{|a+b|}{1+|a+b|} \le \frac{|a|}{1+|a|} + \frac{|b|}{1+|b|}$. Proof is complete.

CONCLUSION

Only by fully implementing the "double reduction" policy can students rediscover the joy of learning and achieve individual growth and all-round development. How to improve the efficiency of mathematics classroom teaching and practice the "double reduction" policy is a topic that every basic educator needs to study seriously. In teaching, focusing on the teaching and application of mathematical thinking methods can well achieve efficient and high-quality classroom teaching, so that students can learn enough to learn well in school. Teachers should continue to explore and practice effective methods to reduce students' homework burden and extracurricular training burden, improve teaching concepts and methods, and take education as the center and starting point, so that the "double reduction" policy can be truly implemented.

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