

Techniques to Learn Mathematics and Problem Solving

❖ Limitlessness



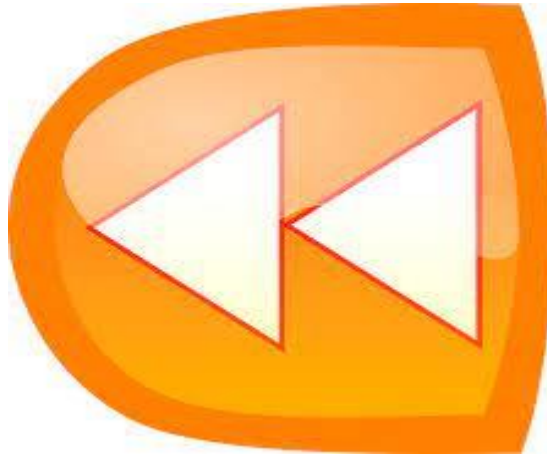
Consider the possibilities and disregard the constraints! Before a statue can be formed, a stonemason must remove many small splinters from the rock. The same is true in mathematics.

Returning to theory is the simplest way to see the opportunities. This includes concentrating on the rules, formulas, and methods you are already familiar with. This could be the source of your problems: Do you understand the rules, formulas, and methods that are expected of you?

Without the proper tools, it is difficult to see opportunities. You might want to go back to basics and make sure you understand them. When you've gathered enough tools, try using them to solve the problem at hand.

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❖ Reverse Direction



Try to solve the problem in reverse! It is frequently easier to approach a problem from the end rather than the beginning.

This method does not always work, but it works very well when you already know the answer. For instance, if the exercise starts with "Show that..."

Look at the exercise "Show that $a^2+2ab+b^2$ can be written as $(a+b)^2$ ".

The backwards approach here is to try to write $(a+b)^2$ as $a^2+2ab+b^2$:

$$(a+b)^2 = (a+b)(a+b)$$

$$= aa + ba + ab + bb$$

$$= a^2+2ab+b^2$$