

## **The Graphing Calculator Should It Be Allowed in Mathematics Classes?**

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Mathematics has been permanently changed by the graphing calculator, and mathematicians frequently argue the appropriateness of allowing such devices in classrooms. If only this were a simple problem with a definitive answer, then all could agree. Unfortunately, there are valid points on both sides of the argument.

Having been directly involved in using graphing calculators, and having had serious reservations regarding their use, there comes a realization that both sides have merit. This paper will make both cases, and the reader will make the final judgment.

The real question is, or should be, what is the intended goal for a particular class? If the goal is to facilitate calculation, then it is hard to refute the claim that the graphing calculator should be used. Graphing calculators do much more than display graphs. They can solve equations, find maxima and minima, and the symbolic calculators can perform most of the complex tasks of calculus. They do so with minimized risk of error, and work at speeds that greatly exceed human ability.

A more general argument could be made on the behalf of graphing calculators, they are to advancing from the old methodologies what word processing is to the slate and chisel. They make things easier, and why should it not be so? Is there an inherent problem with simplifying mathematics? To deny their usage simply because they were not available when most current mathematicians endured hours of calculators is at best arrogant and as worst invalid. Clearly they should not be denied simply because things

were more difficult a few years ago. Unless society wishes collectively to revert to starting fires by rubbing sticks together, advances should be welcomed.

Another advantage is the visual aspect of the presentation. Students can now grasp some complex problems more easily. Perhaps this is the best argument for their general usage.

However, before assuming the argument for use of graphing calculators is overwhelming compelling, consider the question often asked, “Why do I need to study proofs in geometry?” Indeed, many high school students can see no advantage in learning an apparently esoteric skill. But they must endure their studies. Of course, the answer is simply that a logical thought process is being developed, the needs for which are many and varied. Studies often are intended to develop thought processes, not simply add to a reservoir of facts. In fact, thought development is not even on the same lowly plane of significance as memorization of facts. If the mind is to be truly developed, a variety of thought processes must be nurtured. The graphing calculator eliminates mental gymnastics necessary to the development of a healthy intellect.

Now it is necessary to revisit the original question of whether graphing calculators should be allowed in classrooms. The answer is found by looking at the purpose of the class. Is the class a terminal class in mathematics? Is there some significant mental skill to be lost if calculators are used? Or, is the class merely to enhance calculating prowess? The final decision is not to be found in a definitive statement, but in the assessment of each particular case.

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