Numerical Analysis Questions & Answers

Question by Student 201327139

Professor. In Chapter.7, we learned about simpson's rule and modified simpson's rule. But, when I was studying Chapter.7 and searched about simpson's rule from googling , I found about simpson's 1/3 rule and simpson's 3/8 rule. What's the difference between what we learned about and these rules?

What we learned in class is the standard Simpson's rule. There are several variations with some (marginal) advantages over the standard form.. You can read about those in the wikipedia, if you are interested.

Question by Student 201427127

Professor. I want to check my answer sheet. How can I check?

You can come to my office in the afternoon. I'll be here tomorrow and friday, and next week from thursday.

Question by Student 201627143

Professor, can I check my answer sheet too?

Sure, you can come. I'm a bit busy now thus because I have to prepare slides for a conference I'll be going to next week. So if possible, come to see me after next Wednesday.

Question by Student 201427127

Professor, I can't distinct what is prod1 and prod2 at C++ programing code that you made which was PI and SIGMA at your note on blackboard.

You need to use LaTeX to write all mathematics. PI and SIGMA should be written using the same mathematical symbols I used in class. Check out the LaTeX mini HOWTO in the Skylounge. Ask your question again below and I'll answer it if it is correctly typeset.

Question by Student 201427127

Professor, I can't distinct what is prod1 and prod2 at C++ programing code that you made which was π and $\sum$ at your note on blackboard. Thank you. I can use LATEX now.

It was written Π — not π — on the blackboard. I explained prod1 and prod2 again at the beginning of the class today. 0.5 point bonus for the effort.

Question by Student 201527121

I want to prove it by solving simple equation.

$y = \sqrt{(g^2+1)} \pm \dots$

substitue small terms into x

$y = \sqrt{(g^2+1)} + x$

$\sqrt{(g^2+1)} + x = \sqrt{(g^2+1 \pm 2\epsilon_{mach} g^2)}$

Square both sides.

$(g^2+1) + 2\sqrt{g^2+1}x + x^2 = (g^2+1 \pm 2\epsilon_{mach} g^2)$

$2\sqrt{g^2+1}x = -(g^2+1) + (g^2+1) \pm 2\epsilon_{mach} g^2 - x^2$

Square of both sides again

$4(g^2+1)x^2 = x^4 \mp 4\epsilon_{mach} g^2 x^2 + 4\epsilon_{mach}^2 g^4$

ϵ_{mach}^2 *is enough small to assume zero value. Rearrange function and eliminate* x^2 *and* ϵ_{mach}^2

$4(g^2+1) \pm 4\epsilon_{mach} g^2 = x^2$

$x = \pm 2\sqrt{g^2+1 \pm \epsilon_{mach} g^2}$

As a result, we can guess

$y = \sqrt{g^2+1} \pm 2\sqrt{g^2+1 \pm \epsilon_{mach} g^2}$

There is a problem with your proof. When you write

$4(g^2+1)x^2 = x^4 \mp 4\epsilon_{mach} g^2 x^2 + 4\epsilon_{mach}^2 g^4$

You cannot say that the term $\epsilon_{mach}^2 g^4$ is negligible because $\epsilon_{mach}^2 \ll \epsilon_{mach}$. Here, g^4 can be much greater than g^2.. Thus, $\epsilon^2 g^4$ can be as large or larger than $\epsilon g^2 x^2$ and the final answer you give for x is wrong. Nonetheless I'll give you 2 points bonus for the effort.