

A Web-based Tool for Creating Sample Calculus Exams.

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In using various forms of a course website for my calculus classes over a number of years, I've found that the most popular part of the site is invariably the area where I post old tests. I refer to this portion of the website as the "fraternity file" as an acknowledgment of the fact that most fraternities at most colleges and universities keep a file of old exams for use by their members (or so I'm told.) The students' perception is that their test preparation will benefit most by studying old exams, thinking that the best model of the upcoming test is likely to be another professor-produced test over the same material.

In a perfect world, the students would instead create a sample test for themselves, an activity which would encourage them to entertain thoughts about the relative importance of the various topics that have been covered, and would help them to look at the problem types they have encountered in a new (and perhaps enlightening) way. Unfortunately, all attempts by me to have students engage in this activity have failed. Students say that they can't look at a question and decide whether it is the type that would be appropriate for a test, and they don't always have access to a nice solution in the case that they get stuck while attempting to solve such a problem. They can't assess the appropriate amount of time that any given problem should take in an exam situation, and therefore can't produce a sample test which is of the appropriate length and difficulty. After much thought, I've concluded that the students are right about this – the proposed activity of creating a good sample test requires a level of maturity not yet attained by most American students of college-level calculus.

So I've acquiesced on this point and have posted old exams. Unfortunately, I've found that this often produces a new level of frustration for the students and many requests for help by me. Perhaps the old exams don't cover exactly the same set of topics as the one scheduled for next week. And if I post a test, I'd better be prepared to post solutions, unless I want to generate more emails than a spammer offering generic viagra.

In an attempt to help students along in this activity, I've created a web-based tool which will allow a student to create his or her own sample test. The student inputs information about what topics are to be covered on the test, whether or not calculators are allowed, how long the test should take, etc. After submitting the form, a php script runs and interacts with a mysql database which contains a large set of potential exam questions. The questions are merged via the script into a \LaTeX file which then produces a nicely formatted sample test. The student can then download and print the test, as well as a version of the same test which includes solutions.

During my talk, I will discuss the motivation for the creation of this website, the particulars of the site itself, and will discuss the degree to which my fall 2003 calculus class found the site usable and useful.