

**Midterm Exam:**

Thu 13 Mar, 2:00 pm - 3:15 pm

Gould-Simpson 701

(postponed from 3/6/08)

CSC/MATH 573

midterm topics

26 Feb 2008

The CSC/MATH 573 midterm examination will be aimed at testing

- (1) your comprehension of the major **concepts** introduced (undecidability, Church's thesis, simulation, reduction, etc.)
- (2) the major **results** covered in the course so far (undecidable problems, characterizations of CE, ...)
- (3) **using** the results to derive consequences in new situations (new reductions, new simulations, etc.)

Unlike the homeworks, examination problems are chosen to test fundamentals, not to introduce extensions of ideas, require research, or construct difficult arguments.

**Exam Format**

The midterm exam consists of 6 "short answer" questions and 3 "long" questions. Answers are written on the exam paper, and submitted in the envelope provided. You are asked to answer 4 of the short questions (12 points each) and 2 of the long questions (26 points each), for a total of 100 points.

One (*and only one*) extra question can be attempted if you have time, and want extra credit. Please read the following: **if you fail to mark the extra question, or if you do more than one extra question, then the 4 lowest scoring short questions and the 2 lowest scoring long questions will be counted.**

**Coverage**

All notes through end of Lecture 05 (Recursive Function Theory), if covered in lecture, and all lecture through Thursday, March 6. All reading assigned so far. All homework through Homework 3.

**Exam Content**

The questions will come from topical areas as follows:

completeness	undecidability proof
True/False question with multiple parts	reduction to show a language is non-c.e.
reduction to show a language is undecidable	question the properties of many-one reduction $\leq_m$
question applying the recursion theorem	undecidability question involving Turing Machine internals
diagonalization argument	question on the arithmetical hierarchy
algorithm for a decidable TM question	simulation of one computational model by another
characterization of the class of CE languages	

You can bring and refer to your notes and text. Each question will require the solution of some problem, or require the integration of ideas developed in the course.

**Rules for the Exam**

Open book and open notes. You may bring any references. You may bring any solution sets from this Spring's class. You may bring your laptop. You may bring any database under 100 pounds in weight. You may *not* be attached to the Internet during any part of the exam.