

## MATH 1634, Review for Hour Exam 1

- The exam will be on the materials covered in Sections 2.2–2.8, and 3.3. (No direct questions will be from Chapter 1 and Sections 2.1 and 2.2, but they form a base to understand the other materials.)
- It will be assumed that you know
  - the basic graphs that we reviewed at the first day of class,
  - factorization of polynomials,
  - basic identities involving trigonometric functions.
- Please refer to the appropriate handouts that have been distributed.
- The copy of the first hour exam from last year was distributed to give you an idea how the exam looks like. Do **not** expect our upcoming exam to be almost identical to or changing numbers from the last year's. Once you study for our exam enough, set a timer (50 minutes) and try the last year's as if you take an exam; It will help you see whether you are ready for the upcoming exam or not.

### 1. Computation of limits

Show your each step clearly using limit laws.

- $\lim_{x \rightarrow a} f(x)$  §2.3 and §3.3

Refer to an appropriate handout distributed in class. You can also find a link to the handout in this course webpage.

- $\lim_{x \rightarrow \infty} f(x)$  §2.6

Refer to appropriate handouts distributed in class. You can also find link to the handouts in this course webpage.

### 2. Continuity §2.5

- Determine whether a given function  $f(x)$  is continuous at  $x = a$  or not:

A function  $f$  is *continuous* at  $x = a$  if

- (1) the value  $f(a)$  exists
- (2) the limit  $\lim_{x \rightarrow a} f(x)$  exists
- (3) two values from (1) and (2) are the same, i.e.,  $f(a) = \lim_{x \rightarrow a} f(x)$ .

### 3. Use the **limit definition** of derivatives to find the derivative $f'(x)$ of $f(x)$ . §2.8

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \quad (1)$$

(This definition won't be given in the exam; You need to memorize it.)

Remind you of our class policy for the missing exam:

- *Remember the policy in case you fall sick: You must write me an email **BEFORE** the exam – **no excuse!**. If you fail to do so, there will be penalty.*
- *If you are late for the exam, I interpret that you do so at your own risk. There won't be any way to make up your lost time.*