

# MATH 1113/2804 Final Practice Questions

## Spring 2007

Name: \_\_\_\_\_

GTid (9xxxxxxxx): \_\_\_\_\_

Instructor: Mitchel T. Keller

Course (1113/2804): \_\_\_\_\_

- There are 6 questions on this exam on one page (not counting this coverpage). **Write your name at the top of each page.**
- Answer each question in the space provided; if you need additional space, you may write on the back of the page, but clearly indicate by the appropriate problem that you have work on the back.
- Be sure to explain your answers, as answers that are not accompanied by explanations/work may receive no credit.
- You are to complete this exam completely alone, without the aid of notes, texts, calculators, cellular telephones, personal digital assistants, or any other mechanical or digital calculating device.

By signing on the line below, you agree to abide by the Georgia Tech Honor Code, the principles of which are embodied by the Challenge Statement:

*I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Georgia Tech community.*

Failure to sign this cover page will *not* be considered evidence of academic misconduct. However, **if the cover page is not signed, 5 points will be deducted from your raw total score on this exam.**

Student signature: \_\_\_\_\_

Question:	1	2	3	4	5	6	Total
Points:	0	0	0	0	0	0	0
Score:							

You should consider the practice problems for Tests I–IV as well as the actual tests as practice problems for your final as well. These problems will only cover sections 8.3, 8.4, 6.1, 6.2, and 6.5, which we covered since the cutoff date for Test IV.

1. For each of the matrices below, either find its inverse or briefly say why the matrix is noninvertible.

(a)  $\begin{bmatrix} 2 & -1 \\ 1 & 4 \end{bmatrix}$

(b)  $\begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 6 & 2 & 3 \end{bmatrix}$

(c)  $\begin{bmatrix} 2 & \frac{1}{2} \\ -4 & -1 \end{bmatrix}$

2. Compute the determinant for each of the matrices below.

(a)  $\begin{bmatrix} 6 & 2 \\ 3 & 2 \end{bmatrix}$

(b)  $\begin{bmatrix} 1 & 2 & -1 \\ 0 & 3 & 1 \\ 2 & -1 & 2 \end{bmatrix}$

3. **(1113)** Consider an obtuse triangle in which  $A = 120^\circ$ ,  $a = \sqrt{3}$ , and  $b = 1$ . Find  $B$ .
4. **(1113)** Consider an obtuse triangle in which  $a = 2$ ,  $b = 3$ , and  $C = 127^\circ$ . Find  $c$ , the length of the side opposite angle  $C$ . (You should leave any trigonometric functions in your answer unevaluated, e.g.  $\sin 127^\circ$  or  $\cos 127^\circ$ , in such a problem, since you don't have a calculator.)
5. **(1113)** Write the complex number  $-3\sqrt{3} + 3i$  in trigonometric (polar) form.
6. **(1113)** Use DeMoivre's Theorem to find

$$\left[ 5 \left( \cos \frac{5\pi}{12} + i \sin \frac{5\pi}{12} \right) \right]^4$$

and write it in standard (rectangular) form.