

Name \_\_\_\_\_ ID # \_\_\_\_\_ Section # \_\_\_\_\_

There are 16 multiple-choice questions, 8 True/False questions, and 3 partial credit questions. For the partial credit problems you **must present your work clearly and understandably; no credit will be given for unsupported answers.** For True/False and multiple-choice problems, please circle the correct answer in each question.

THE USE OF CALCULATORS IS NOT PERMITTED IN THIS EXAMINATION.

THERE ARE 20 PROBLEMS ON 13 PAGES, INCLUDING THIS ONE.  
CHECK YOUR BOOKLET NOW.

**The area below is for the instructor's use.**

MC ..... (96)

T/F ..... (16)

18 ..... (10)

19 ..... (14)

20 ..... (14)

Total ..... (150)

1. (6 pts.)  $\lim_{x \rightarrow 5} \frac{x^2}{(x-5)^3} =$

- a) 5
- b) 25
- c)  $-\infty$
- d)  $\infty$
- e) The limit does not exist.

2. (6 pts.)  $\lim_{x \rightarrow 2^-} \frac{|x-2|}{x^2-4} =$

- a)  $\frac{-1}{4}$
- b) 0
- c) 1
- d)  $\frac{1}{4}$
- e) The limit does not exist.

3. (6 pts.)  $\lim_{x \rightarrow 3} \frac{x^2 - 3x}{\sqrt{x+1} - 2} =$

- a) 12
- b) 9
- c) 3
- d) 1
- e) The limit does not exist.

4. (6 pts.) What is the instantaneous rate of change of the function  $f(x) = \tan(\pi x^2)$  at  $x = \frac{1}{2}$ ?

- a) 0
- b) 1
- c)  $\sqrt{2}\pi$
- d)  $2\pi$
- e)  $-\pi$