

HAND IN PART

Prof. Girardi Math 142 Fall 2012 12.06.12 Practice Exam over Chapter 7

MARK BOX		
PROBLEM	POINTS	
1-?	?	
%	100	

NAME: _____

PIN: _____

INSTRUCTIONS

- (1) There are multiple choice problems 1 through ?.
 - First, indicate (to yourself) your answers directly on the STATEMENT OF MULTIPLE CHOICE PROBLEMS part.
 - Once finished with the multiple choice problems, go back to the HAND IN PART and indicate your answers on the table provided. You can take the STATEMENT OF MULTIPLE CHOICE PROBLEMS part home with you (so you can check your answers once the solutions are posted).
- (2) The MARK BOX indicates the problems along with their points.
Check that your copy of the exam has all of the problems.
- (3) You may **not** use: electronic devices, books, personal notes.
- (4) During this exam, do not leave your seat unless you have permission. If you have a question, raise your hand. When you finish: put your pencil down and raise your hand.
- (5) **This practice exam covers Chapter 7 (integration).**
The final exam will cover:
7.1–7.5, 7.8, 11.1–11.11, 6.1–6.3, 10.3–10.4 .

Honor Code Statement

I understand that it is the responsibility of every member of the Carolina community to uphold and maintain the University of South Carolina's Honor Code.

As a Carolinian, I certify that I have neither given nor received unauthorized aid on this exam.

I understand that if it is determined that I used any unauthorized assistance or otherwise violated the University's Honor Code then I will receive a failing grade for this course and be referred to the academic Dean and the Office of Academic Integrity for additional disciplinary actions.

Furthermore, I have not only read but will also follow the above Instructions.

Signature : _____

TABLE FOR YOUR ANSWERS TO MULTIPLE CHOICE PROBLEMS 1 – ?

Instructions.

- Indicate (by circling, boxing, or x-ing) your solution to each problem.
- Select at most one response for each problem.
- The scoring is: ? points for a correct answer and 0 points for an incorrect-or-blank answer.

Your Solutions					
PROBLEM					
1	1a	1b	1c	1d	1e
2	2a	2b	2c	2d	2e
3	3a	3b	3c	3d	3e
4	4a	4b	4c	4d	4e
5	5a	5b	5c	5d	5e
6	6a	6b	6c	6d	6e
7	7a	7b	7c	7d	7e
8	8a	8b	8c	8d	8e
9	9a	9b	9c	9d	9e
10	10a	10b	10c	10d	10e
11	11a	11b	11c	11d	11e
12	12a	12b	12c	12d	12e
13	13a	13b	13c	13d	13e
14	14a	14b	14c	14d	14e
15	15a	15b	15c	15d	15e
16	16a	16b	16c	16d	16e
17	17a	17b	17c	17d	17e

STATEMENT OF MULTIPLE CHOICE PROBLEMS

1. Evaluate the integral

$$\int_0^1 \frac{x}{x^2 + 9} dx .$$

Hint: $\ln b - \ln a = \ln\left(\frac{b}{a}\right)$.

- a. $\ln\left(\frac{10}{9}\right)$ b. $\frac{1}{2}\ln\left(\frac{10}{9}\right)$ c. $\frac{1}{2}\ln(10) - \ln(9)$ d. $2\left(\frac{10}{9}\right)$ e. None of these

2. Evaluate the integral, for $x > 0$,

$$\int \frac{x-1}{x^2+2x} dx .$$

- a. $\frac{\sqrt{2}}{2} \arctan x + C$ b. $\frac{1}{2} \ln(x+2) - \frac{3}{2} \ln x + C$ c. $\frac{3}{2} \ln(x+2) + \frac{1}{2} \ln x + C$ d. $\frac{3}{2} \ln(x+2) - \frac{1}{2} \ln x + C$
e. none of these

3. Evaluate the integral

$$\int \frac{\sin 2x}{1 + \cos^4 x} dx .$$

- a. $1 - \cos^2 x + C$ b. $-\arctan(\cos^2 x) + C$ c. $-\arcsin(\tan x) + C$ d. $-\cos^2 2x + C$
e. none of these

4. Evaluate the integral

$$\int \frac{x^2}{x+2} dx$$

- a. $\frac{x^2}{2} - 2x + 4 \ln|x+2| + C$ b. $\frac{x^2}{2} + 2x + 4 \ln|x+2| + C$ c. $x^2 - 2x + 4 \ln|x+2| + C$
d. $\frac{x^2}{2} - 2x - 4 \ln|x+2| + C$ e. none of these

5. Evaluate the integral

$$\int_0^{\frac{\pi}{6}} x \sin x \cos x dx .$$

- a. $\frac{\sqrt{3}}{16} - \frac{\pi}{48}$ b. $\frac{\sqrt{3}}{16} + \frac{\pi}{48}$ c. $\frac{1}{16} - \frac{\pi\sqrt{3}}{48}$ d. $\frac{1}{16} + \frac{\pi\sqrt{3}}{48}$ e. none of these

6. Evaluate

$$\int_0^{\frac{\pi}{2}} \sin^2 x \cos^3 x dx .$$

- a. $\frac{3}{10}$ b. $\frac{7}{10}$ c. $\frac{8}{15}$ d. $\frac{2}{15}$ e. none of these

7. Evaluate the integral

$$\int \frac{x^3}{\sqrt{x^2 + 25}} dx .$$

a. $\frac{-2(x^2 + 25)^{3/2}}{3} + x^2\sqrt{x^2 + 25} + C$

b. $(x^2 + 25)^{3/2} - 5\sqrt{x^2 + 25} + C$

c. $\frac{(x^2 + 25)^{3/2}}{3} - 25\sqrt{x^2 + 25} + C$

d. $(x^2 + 25)^{3/2} - \sqrt{x^2 + 25} + C$

e. none of these

8. Evaluate the integral, for $x > 0$,

$$\int \frac{1 + 5e^x}{1 - e^x} dx .$$

a. $6x - 5 \ln |e^x - 1| + C$

b. $x + 8 \ln |e^x - 1| + C$

c. $8x + 6 \ln |e^x - 1| + C$

d. $x - 6 \ln |e^x - 1| + C$

e. none of these

9. Evaluate the definite integral

$$\int_1^{\infty} \frac{dx}{x \ln x} .$$

a. $1/2$

b. 0

c. $-1/4$

d. diverges to ∞

e. none of these

10. Which of the following integrals is equal to 1.25?

a. $\int_0^1 \frac{1}{x^{0.2}} dx$

b. $\int_0^1 \frac{1}{x^{0.5}} dx$

c. $\int_0^1 \frac{1}{x^{0.7}} dx$

d. $\int_0^1 \frac{1}{x^2} dx$

e. $\int_0^1 \frac{1}{x^{2.5}} dx$

11. Evaluate the integral or conclude that it is divergent.

$$\int_{-\infty}^{\infty} \frac{dx}{4x^2 + 4x + 5} .$$

a. $\pi/2$

b. $\pi/4$

c. $\pi/8$

d. divergent

e. none of these

12. Evaluate the integral

$$\int e^t \sqrt{25 - e^{2t}} dt .$$

a. $\frac{25}{2} \arcsin(e^t/5) + \frac{1}{2} e^t \sqrt{25 - e^{2t}} + C$

b. $\arcsin(e^t/5) + \frac{1}{2} e^t \sqrt{25 - e^{2t}} + C$

c. $\frac{25}{2} \arcsin(e^t/5) + \frac{1}{2} \sqrt{25 - e^{2t}} + C$

d. $\arcsin(e^t/5) + \frac{1}{2} \sqrt{25 - e^{2t}} + C$

e. none of these

13. Evaluate the integral

$$\int_{\pi/6}^{\pi/3} \frac{\ln(\tan x)}{\sin x \cos x} dx .$$

- a. 0 b. $-\frac{1}{8}(\ln 3)^2$ c. $\frac{1}{8}(\ln 3)^2$ d. $-\frac{1}{6}(\ln 3)^2$ e. none of these

14. Evaluate the following integral.

$$I = \int_0^{\infty} e^{-2x} dx$$

- a. $I = \frac{1}{2}$ b. $I = 2$ c. $I = -2$ d. the integral is divergent e. none of these

15. Let a and b be real numbers. What integral must appear in place of the “?” to make the following statement true?

$$\int_{-\infty}^a \frac{8}{x^2 + 5} dx + \int_a^{\infty} \frac{8}{x^2 + 5} dx = ? + \int_b^{\infty} \frac{8}{x^2 + 5} dx$$

- a. $\int_b^{-\infty} \frac{8}{x^2 + 5} dx$ b. $\int_{-\infty}^b \frac{5}{x^2 + 8} dx$ c. $\int_{-\infty}^b \frac{8}{x^2 + 5} dx$ d. $\int_b^{-\infty} \frac{8}{x^2 - 5} dx$ e. none of these

16. Evaluate the integral

$$\int \frac{1}{-e^{-x} + e^x} dx .$$

- a. $\ln\left(\frac{|e^x - 1|}{e^x + 1}\right) + C$ b. $\frac{1}{2} \ln\left(\frac{|e^x - 1|}{e^x + 1}\right) + C$ c. $-\frac{1}{2} \ln\left(\frac{|e^x - 1|}{e^x + 1}\right) + C$
d. $-\ln\left(\frac{|e^x - 1|}{e^x + 1}\right) + C$ e. none of these

17. Evaluate the integral

$$\int x \ln(1 + x) dx .$$

- a. $\frac{1}{4}x^2 - \frac{3}{2} \ln(1 + x) + \frac{x^2}{2}(\ln(1 + x)) + C$ b. $\frac{1}{2}x - \frac{1}{4}x^2 - \frac{1}{2} \ln(1 + x) + \frac{x^2}{2}(\ln(1 + x)) + C$
c. $-\frac{1}{3}x + \frac{1}{6}x^2 - \frac{1}{9}x^3 + \frac{x^3}{3} \ln(1 + x) + \frac{1}{3} \ln(1 + x) + C$ d. $\frac{1}{4}x^2 - \frac{1}{2} \ln(1 + x) + \frac{x^2}{2}(\ln(1 + x)) + C$
e. none of these