Math 102
First Major Exam
Summer - 2000 TIME : 75 Minutes

1. If $f\,x \quad \frac{x^3}{x^2 \quad 1}$, then find x so $,f^{\,1}\,x \quad 2.$
2. Find $\frac{dy}{dx}$, if $y \quad e^{\cos\ ^1 x} \quad \ln xe^x$.
3. $\lim_{x\ 0} \frac{2^x \quad e^x}{x^2}$
4. Sketh the region bounded by the curves $x \quad y^2$,and $y \quad x \quad 2$. And find its area .
5. Solve for x , where $e^{2x} \quad e^x \quad 6 \quad 0$.
6. $\lim_{x\ \frac{}{2}} \frac{\tan x}{\sec x}$
7. Find the volume of the solid generated if the region bounded by the graphs of $y \quad \frac{1}{2}x$, $y \quad x \quad 1$,and $x \quad 3$ is revolving about the $x \quad axis$.
8. $\frac{d}{dx} \int_{\tan x}^{\sqrt{x}} \frac{t^2}{t^2 \quad 2} dt$
9. Use logarithmic differentiation to find $\dot{y}$ if $y \quad x^2 \quad 3^{\ \sin x}$.
10. Find the volume of the solid generated if the region bounded by the graphs of $y \quad \ln x$, $x \quad e$, and $y \quad 0$ is revolving about the $y \quad axis$.

KFUPM — Math Dept
MATH 102-2 Summer 2001 Quize 4 B

(4pts)1. $\int \frac{1}{x^2 \sin\frac{1}{x}} dx$

(3pts)2. $\int e^{\ 3x} \cos 4x\,dx$

(3pts)3. $\int \cot^3 x\,dx$

pagestyle

Summer 1999(983)

MATH 102 Final Exam

Time: **2 $\frac{1}{4}$ hours**

Name: _____

ID #: _____ Section #: _____

_____Serial #: _____

Notes:

The exam is composed of two parts:

Part I multiple choice (13 questions).

Part II solving (4 questions).

Do all the problems.

renewcommand

Quest.#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Grade	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6	4	4
Marks																	

Total: _____/70

For questions 1 to 13, circle one of the choices:

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renewcommand

1.	(a)	(b)	(c)	(d)	(e)
2.	(a)	(b)	(c)	(d)	(e)
3.	(a)	(b)	(c)	(d)	(e)
4.	(a)	(b)	(c)	(d)	(e)
5.	(a)	(b)	(c)	(d)	(e)
6.	(a)	(b)	(c)	(d)	(e)
7.	(a)	(b)	(c)	(d)	(e)
8.	(a)	(b)	(c)	(d)	(e)
9.	(a)	(b)	(c)	(d)	(e)
10.	(a)	(b)	(c)	(d)	(e)
11.	(a)	(b)	(c)	(d)	(e)
12.	(a)	(b)	(c)	(d)	(e)
13.	(a)	(b)	(c)	(d)	(e)

setcounter **Part I** Multiple-choice type questions (1–13)

Q1. Comment displaystyle $\int_{e}^{e^2} \frac{1}{x \ln x^2}\, dx$

setcounter

$\ln 2$ #

$\frac{\ln 2}{2}$ #

$e^2 \quad e$ #

$\frac{e^2 \quad 1}{4e^4}$ #

$2e^2 \quad e$ #

Q2. Comment displaystyle $\int_{1}^{8} \frac{1}{\sqrt{1 \quad \sqrt{x \quad 1}}}\, dx$

setcounter

$\frac{16}{3}$ #

$\frac{232}{15}$ #

$\ln 2$ #

$\frac{22}{5}$ #

2 #

Q3. Comment displaystyle $\frac{dx}{\sqrt{e^{2x} \quad 4}}$

setcounter

$\frac{1}{2} \arcsin \frac{e^x}{2} \quad c$ #

$\arcsin \frac{e^x}{2} \quad c$ #

$\frac{1}{2} \text{ mbox } \frac{e^x}{2} \quad c$ #

$\frac{1}{2}$ mbox e^x c #

mbox $\frac{e^x}{2}$ c #

Q4. Comment If displaystyle $f\ x$ $e^x \sin x$, then displaystyle $2f$ $3f$ is:
setcounter

e #

$2e$ #

$2e$ #

0 #

e #

Q5. The area of the region inside the graph of displaystyle r 2 $2\cos$ is given by:
setcounter

$\int_0^{2} 2 \quad 2\cos \quad ^2 d$ #

$\int_0^{2} 2\ 2 \quad 2\cos \quad ^2 d$ #

$\int_0^{2} \frac{1}{2} \quad 2 \quad 2\cos \quad ^2 d$ #

$\int_0 2 \quad 2\cos \quad ^2 d$ #

$\int_0 \frac{1}{2}\ 2 \quad 2\cos \quad ^2 d$ #

Q6. Comment If the region bounded by the graphs of displaystyle y $\sqrt{x}$, and displaystyle y $\frac{1}{2}x$ is revolved about the line displaystyle x 1, then the volume of the solid generated by using the shell method is given by:
setcounter

$\int_0^{4} 2 \quad x \quad 1 \left(\sqrt{x} \quad \frac{1}{2}x\right) dx$ #

$\int_0^{2} 2 \quad x \quad 1 \left(\sqrt{x} \quad \frac{1}{2}x\right) dx$ #

$\int_0^{4} \quad x \quad 1 \left(\sqrt{x} \quad \frac{1}{2}x\right) dx$ #

$\int_0^{4} 2 \quad x \quad 1 \left(\sqrt{x} \quad \frac{1}{2}x\right) dx$ #

$\int_0^{2} \quad x \quad 1 \left(\sqrt{x} \quad \frac{1}{2}x\right) dx$ #

Q7. Comment displaystyle $\int_0^{/6} \tan^4 2x\, dx$
setcounter

$\frac{\sqrt{3}}{2} \quad \overline{2}$ #

$\frac{\sqrt{3}}{2} \quad \overline{6}$ #

$3\sqrt{3}$ $\overline{6}$ #

$\overline{6}$ #

$2\sqrt{3}$ $\overline{6}$ #

Q8. Comment One of the following is False: setcounter

mbox #

mbox #

mbox #

mbox #

mbox #

Q9. Comment The number of points of intersection between the polar curves r $\cos 4$ and displaystyle r $\frac{1}{2}$ are:
setcounter

2 #

4 #

8 #

12 #

16 #

Q10. displaystyle $\lim_{x\ 0}$ 1 $2\sin x^{\ 1/3x}$
setcounter

mbox #

$e^{2/3}$ #

e #

$e^{3/2}$ #

1 #

Q11. Comment The sequence displaystyle $\left\{\sqrt{4n^2\ \ 3n}\ \ 2n\right\}$ is:
setcounter

mbox #

mbox #

mbox #

mbox #

mbox #

Q12. Comment The point at which the parametric curve displaystyle x $\tan^{\ 1}t,\ y$ $5\cosh 3t,$ t R has a horizontal tangent is:

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setcounter

$5,0$ #

$0,15$ #

$3,5$ #

$\left(\frac{}{2},5\right)$ #

$0,5$ #

Q13. Comment If the region bounded by the graphs of displaystyle $y \quad x^2 \quad 1,$ and the x-axis is revolved about the x-axis, then the volume is given by:

setcounter

$\int_{1}^{1} x^4 dx$ #

$\int_{1}^{1} x^4 \quad 1 \; dx$ #

$\int_{1}^{1} 1 \quad x^2 \;^2 dx$ #

$2\int_{0}^{1} 1 \quad x^2 \;^2 \quad 1 \; dx$ #

$2\int_{1}^{1} 1 \quad 1 \quad x^2 \;^2 \; dx$ #

Part II. Solving questions:

Q14. Comment displaystyle $\frac{\sinh^3 x}{\cosh^2 x} dx$

Q15. Comment Sketch the region R in the 1st quadrant between the graphs of displaystyle $y \quad 2^x,$ y-axis, x-axis and $x \quad 2.$ Find the area of R.

Q16. Comment Determine whether the series displaystyle $\sum_{n \; 1} \frac{e^{2n}}{2n \; 1 \; !}$ is convergent or divergent.

Q17. Comment displaystyle $x\sqrt{4x^2 \quad 9} \; dx$