NAME................................   SEC.   1   2   3   4   5   6

I.D...................................

Reserved for Corrector

Grade of Part I

Prob.1
Prob.2
Prob.3
Prob.4
Prob.5
EXAM GRADE:

Instructions:

1.Answer each question in detail in the space provided for it.You may lose total credit for giving only the final answer.

2.The colored booklet is for your scratch work.It will not be collected.

3.Write your name and I.D. and circle your section number.
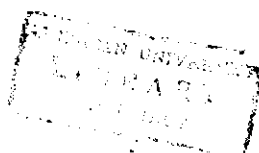
Distribution of Grades		
Part I	60	points
Part II 1.	2+4	
2.	8	
3	6	
4.	10	
5.	10	
TOTAL:	**100**	**POINTS**

Given the function: $y = f(x) = \dfrac{5x^2 - 3}{x^2 - 4}$. **Answer the questions 1-------7.**

1. $f'(1) =$

   A. $-\dfrac{10}{9}$ B. $-\dfrac{26}{9}$ C. $-\dfrac{34}{9}$ D. $-\dfrac{42}{9}$ E.

2. $\lim\limits_{x \to \infty} f(x) =$

   A. 6   B. 2   C. 4   D. 5   E.

3.   The discontinuities of the function occur at $x =$

   A. ± 2 B. $\pm 2 \, and \pm \sqrt{\dfrac{3}{4}}$ C. $\pm\dfrac{3}{4}$ D. –3 and -4   E.

4.   The value of x for which $f'(x) = 0$ is:

   A. 1   B. -1   C. 0   D. 2   E.

5.   The y-intercept of the graph of the function is:

   A. (3/2,0)   B. (0,-3)   C.(0,-2)   D. (0,3/4)   E.

6.   The average rate of change in the value of the function,in moving from $x = 0 \; to \; x = 3$ is:

   A. 39/20   B. 3/4   C. 63/20   D. 51/20   E.

7.   The graph of $f(x)$ has m horizontal and n vertical asymptotes.Then m and n respectively are:

   A. 1 and 2   B. 3 and 2   C. 2 and 3   D. 1 and 4   E.

8.Solve for x: $\log_2(2x - 5) - \log_2(x - 4) = 3$.

   A. 11/2   B. 9/2   C. 6   D. 7   E.

9. $e^{-\ln(5)} = \ldots$

   A. 1/5   B. 5   C. -5   D. –1/5   E.

10. Solve : $x^2 \ln(x + 4) - 16\ln(x + 4) = 0$.

   A. $x = 5, \pm 3$ B. $x = 4, -3$ C. $x = \pm 4$ D. $x = \pm 4, -3$ E.

11. The domain of definition of the function: $f(x) = \sqrt{x + 3} \ln(4 - x)$ is:

   A. $x \neq 4, x \neq -3$ B. $-3 < x \leq 4$ C. $-3 \leq x < 4$ D. $x \leq -3 \; or \; x > 4$ E.

12. $\sum\limits_{n=0}^{4} |n^2 - 2n| =$

   A. 16   B. 8   C. 2   D. 4   E.

13. The slope of the line parallel to $2x - 3y - 12 = 0$, is:

  A. 2/3   B. 3/2   C. –2/3   D. –3/2   E.

14. If $f(x) = x^2 - 3x$ and $g(x) = \sqrt{x+1}$, then $f(g(3)) =$

  A. 2   B. $\sqrt{2}$ C. -2   D. -4   E.

15. $\sqrt{(-2)(\sqrt[3]{-8})} =$

  A. 4   B. –2   C. $2\sqrt{2}$ D. 2   E.

16. If $3^{\sqrt{x}} = 9$ then $x =$

  A. $\sqrt{2}$ B. $\sqrt{3}$ C. 4   D. 3   E.

17. Simplify: $\dfrac{9^2 2^{-3} 9^{-1}}{3^{-2} 8^{-1} 27}$

  A. 1/3   B. 6   C. 1/6   D. 3   E.

18. Given the system: $\begin{cases} 2x + y = 5 \\ 3x - 2y = 4 \end{cases}$, then $y =$

  A. -4   B. 1   C. 4   D. –1   E.

19. If $|2x - 7| = -5x$; then $x =$

  A. –7/3   B. 1   C. -1 or –3/2   D. 2 or –7/3   E.

20. If M(2,-3) is the midpoint of the segment connecting the points A(-1,-2) and B(x,y), then, (x,y)=

  A. (3,-5)   B. (5,-4)   C. (-3,4)   D. (3,-4)   E.

WRITE YOUR ANSWER AS: A or B or C or D or E next to the question number.

1 ....   6.....................   11.....................   16.....................

2.....................   7.....................   12.....................   17.....................

                                                                                $C : ....*3 =$

3.....................   8.....................   13.....................   18..................... $W : ..*0.5 =$

                                                                                $Gr. =$

4.....................   9.....................   14.....................   19.....................

5.....................   10.....................   15.....................   20.....................

2

PART II: Answer the following five questions in the space provided below the question.

1.(2+4=6 Points) The demand function for a product is : $q=f(p)= 400-5p$.

Where q is the quantity and p is the price in dollars.

a) Determine, in terms of p, the quadratic revenue function $R=g(p)$.

b) What price should be charged to maximize total revenue?

2.(8 Points) Solve in detail: $3+2x \leq 5-x < 10+x$

3.(6 Points) The following are results of gaussian elimination method applied to three systems of linear equations. Interpret the meaning of each result, by giving the solution if any.

a) $\begin{array}{ccc|c} 1 & 0 & 5 & 10 \\ 0 & 1 & -2 & -3 \\ 0 & 0 & 0 & 8 \end{array}$

b) $\begin{array}{ccc|c} 1 & 0 & -4 & 6 \\ 0 & 1 & 3 & -9 \\ 0 & 0 & 0 & 0 \end{array}$

c) $\begin{array}{ccc|c} 1 & 0 & 0 & -3 \\ 0 & 1 & 0 & 8 \\ 0 & 0 & 1 & 1 \end{array}$

4.**(10 Points)**Consider the function: $y = f(x) = \begin{cases} 1 & ; & x \le -1 \\ -x & ; & -1 < x < 0 \\ x & ; & 0 < x < 2 \\ 3 & ; & x \ge 2 \end{cases}$

Answer the following short questions:

a) $\lim\limits_{x \to -1^-} f(x) =$ b) $\lim\limits_{x \to -1^+} f(x) =$ c) $\lim\limits_{x \to -1} f(x) =$ d) $f(-1) =$

e)Is f continuous at $x = -1$? Justify.

f) $\lim\limits_{x \to 2^-} f(x) =$ g) $\lim\limits_{x \to 2^+} f(x) =$ h) $\lim\limits_{x \to 2} f(x) =$ I) $f(2) =$

j) Is f continuous at $x = 2$? Justify.

5.**(10 Points)**Consider the function: $y=f(x)= 2(x+1)^2 - 8$.

a)Find the y-intercept.

b)Find the x-intercepts if any.

c)Find the vertex.

d)Find the equation of the axis of symmetry.

e)Sketch the graph.