

MA123 Exam 2

March 5 2008

NAME _____ Section _____

Problem	Answer				
1	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
2	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
3	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
4	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
5	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
6	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
7	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
8	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
9	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
10	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
11	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
12	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
13	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
14	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
15	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>

Instructions. Circle your answer in ink on the page containing the problem and on the cover sheet. After the exam begins, you may not ask a question about the exam. Be sure you have all pages (containing 15 problems) before you begin. For grading use:

Number of problems correct: _____/15

SCORE: _____/100

NAME _____

1. If $f(x) = \frac{-x}{x^2-1}$ then $f'(x) =$

(a) $\frac{-x^2-1}{(x^2-1)^2}$

(b) $\frac{1}{2x}$

(c) $\frac{-x^2-1}{x^2-1}$

(d) $\frac{x^2+1}{x^2-1}$

(e) $\frac{x^2+1}{(x^2-1)^2}$

2. If $F(s) = \sqrt{2s+2}$, find $F'(1)$.

(a) $\frac{1}{2}$

(b) $\frac{1}{2\sqrt{2}}$

(c) $\frac{1}{\sqrt{2}}$

(d) $\frac{3}{2\sqrt{2}}$

(e) $\frac{3}{2}$

3. If $g(t) = \frac{1}{t^2+1}$, then the slope of the tangent line to the graph of $g(t)$ at $t = 3$ is

(a) $-\frac{1}{25}$

(b) $-\frac{2}{25}$

(c) $-\frac{1}{50}$

(d) $-\frac{3}{50}$

(e) $-\frac{4}{25}$

4. If $R(x) = (x - 2)(x^2 - 2)(x^3 - 2)$, find $R'(2)$.
- (a) 0
 - (b) 12
 - (c) 48
 - (d) -8
 - (e) -6
5. Suppose $f(t) = H(G(t))$ and $H(3) = 5$, $H'(3) = 4$, $G(2) = 3$, and $G'(2) = 7$. Find $f'(2)$.
- (a) 12
 - (b) 35
 - (c) 28
 - (d) 15
 - (e) 43
6. If $G(s) = u(s^2)$ and $u(1) = 10$, $u'(1) = 4$, $u(-1) = 7$, and $u'(-1) = 2$, then $G'(-1) =$
- (a) -20
 - (b) 4
 - (c) 10
 - (d) 2
 - (e) -8

7. Let $f(x) = |x^2 - 1| + 2$. Find the minimum of $f(x)$ on the interval $[-3, 3]$.
- (a) 3
 - (b) 0
 - (c) 1
 - (d) 2
 - (e) -1
8. Let $Q(t) = t^2$. Find a value A such that the average rate of change of $Q(t)$ from 1 to A equals the instantaneous rate of change of $Q(t)$ at $t = 2A$.
- (a) 1
 - (b) $\frac{1}{3}$
 - (c) $\frac{1}{4}$
 - (d) $\frac{1}{5}$
 - (e) Does not exist
9. Suppose the derivative of a function $g(x)$ is given by $g'(x) = x^2 - 1$. Find all intervals on which $g(x)$ is increasing.
- (a) $(-\infty, \infty)$
 - (b) $(-1, 1)$
 - (c) $(-\infty, -1)$ and $(1, \infty)$
 - (d) $(0, \infty)$
 - (e) $(-\infty, 0)$

10. Suppose $f(t) = 2t^3 - 9t^2 + 12t + 31$. Find the value of t in the interval $[0, 3]$ where $f(t)$ takes on its minimum.
- (a) 0
 - (b) 1
 - (c) 2
 - (d) 3
 - (e) Neither the maximum nor the minimum exists on the given interval.
11. Suppose that $f(x) = xg(x)$, and for all positive values of x the function $g(x)$ is negative (i.e., $g(x) < 0$) and decreasing. Which of the following is true for the function $f(x)$?
- (a) $f(x)$ is negative and decreasing for all positive values of x .
 - (b) $f(x)$ is positive and increasing for all positive values of x .
 - (c) $f(x)$ is negative and increasing for all positive values of x .
 - (d) $f(x)$ is positive and decreasing for all positive values of x .
 - (e) None of the above
12. If $Q(s) = s^7 + 1$, find
- $$\lim_{h \rightarrow 0} \frac{Q(1+h) - Q(1)}{h}$$
- (a) 2
 - (b) 5
 - (c) 6
 - (d) 7
 - (e) 8

13. Suppose $f(t) = \frac{F(t)}{t}$ and $F(1) = 2$, $F'(1) = 6$. Find $f'(1)$.
- (a) 2
 - (b) 4
 - (c) 1
 - (d) -4
 - (e) -1
14. If the line $y = 9 + 3(x - 4)$ is tangent to the graph of $G(x)$ at $x = 4$ and $G(x)$ is differentiable at $x = 4$, then $G(4) - G'(4)$ equals
- (a) 3
 - (b) 4
 - (c) 5
 - (d) 6
 - (e) 9
15. Suppose the derivative of $H(s)$ is given by $H'(s) = s^2(s + 1)$. Find the value of s in the interval $[-100, 100]$ where $H(s)$ takes on its minimum.
- (a) -100
 - (b) -1
 - (c) 0
 - (d) 1
 - (e) 100