

# MA123 Exam 1

20 September 2006

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. You may use the following formula for the derivative of a quadratic function. If

$$p(x) = Ax^2 + Bx + C$$

then

$$p'(x) = 2Ax + B$$

1. If  $h(x) = \sqrt{x^2 + 1}$  and  $g(x) = 2x - 1$  then  $h(g(x)) =$

- (a)  $4x$
- (b)  $\sqrt{4x^2 - 4x + 2}$
- (c)  $2\sqrt{x^2 + 1} - 1$
- (d)  $\sqrt{4x^2 - 4x + 2}$
- (e)  $2x^2 - 1$

2. If  $u(t) = t + 7$  then  $u(v(x)) = x$  if  $v(x) =$

- (a)  $x + 7$
- (b)  $1$
- (c)  $x - 7$
- (d)  $0$
- (e)  $x$

3. The inequality  $x^2 + x - 2 > 0$  is equivalent to

- (a)  $x < -2$  or  $x > 1$
- (b)  $-2 < x$  and  $x < 1$
- (c)  $x = -2$  or  $x = 1$
- (d)  $x < -\sqrt{2}$  or  $x > 1$
- (e)  $x = -\sqrt{2}$  and  $x = 1$

4. Suppose  $F(x) = \sqrt{x^2 - 2x - 3}$ . What is the largest value of  $A$  such that  $F(x)$  is defined on the interval  $[-5, A]$  ?

- (a)  $-4$
- (b)  $-3$
- (c)  $-2$
- (d)  $-1$
- (e)  $0$

5. An equation of a line through the points  $(3, 5)$  and  $(8, 7)$  in the  $(s, t)$  plane is

- (a)  $s = 6 + 5(t - 5)$
- (b)  $t = 6 + 5(s - 5)$
- (c)  $2t = 6 + 5(s - 5)$
- (d)  $2s = 6 + 5(t - 5)$
- (e)  $s = 5 + 6(t - 5)$

6. If  $f(t) = 1/t$  then

$$\frac{f(t+h) - f(t)}{h} =$$

- (a)  $1/(h^2)$
- (b)  $1/(t(t+h))$
- (c)  $(-1)/(t(t+h))$
- (d)  $1/(t(t-h))$
- (e)  $-1/(t(t-h))$