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The Hashemite University

Department of Mathematics

Calculus I

Second Exam

Date 12-11-2012

Time: One Hour

اسم الطالب: دمياح محمد الحواده الرقم الجامعي: ١٣٣١٥٦٧ الرقم المتسلسل: ٥٠

اسم المدرس: محمد فدوسي وقت المحاضرة: ٦٢-١ Pm

1	2	3	4	5	6	7	8	9	10	11	12
a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	x	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d

1) Let  $f$  and  $g$  be differentiable at  $x = 1$ , such that  $f(1) = 1$ ,  $f'(1) = 2$ ,  $g(1) = -2$  and

$$g'(1) = 4, \text{ then } \frac{d}{dx}(g(x)\sqrt{f(x)})|_{x=1} =$$

- a) 5      b) 2      c)  $-\frac{5}{2}$       d)  $\frac{5}{2}$

2) If  $f(2) = 1$ ,  $g(x) = \ln(x^3 + 1)$ , and  $(gof)'(2) = 6$ , then  $f'(2) =$

- a) 7      b) -3      c) 4      d) 8

3) The equation of the tangent line to the curve

$$f(x) = \sin^2 x - x \cos x^2 + 3 \text{ at } x = 0 \text{ is given by}$$

- a)  $y = x + 3$       b)  $y = x - 3$       c)  $y = -x - 3$       d)  $y = -x + 3$

4) The critical point(s) of  $f(x) = x + \frac{4}{x}$  is (are)

- a) 0 only      b) -2 and 0 and 2      c) -2 and 2      d) 2 only

5) The values of k and m that make

$$f(x) = \begin{cases} \frac{1}{x} + x & , x > 1 \\ kx - m & , x \leq 1 \end{cases}$$

differentiable at  $x=1$  are:

- a)  $k=0, m= -2$
- b)  $k=0, m= 2$
- c)  $k=-1, m= 2$
- d)  $k=1, m= 2$

6)  $\lim_{x \rightarrow \infty} \left( \frac{x+2}{x+7} \right)^{-2x} =$

- a)  $e^4$
- b)  $e^6$
- c)  $e^8$
- d)  $e^{10}$

7) The value of (c ) such that the line  $y = -x - 4$ , is tangent to the curve  $y = c\sqrt{x}$

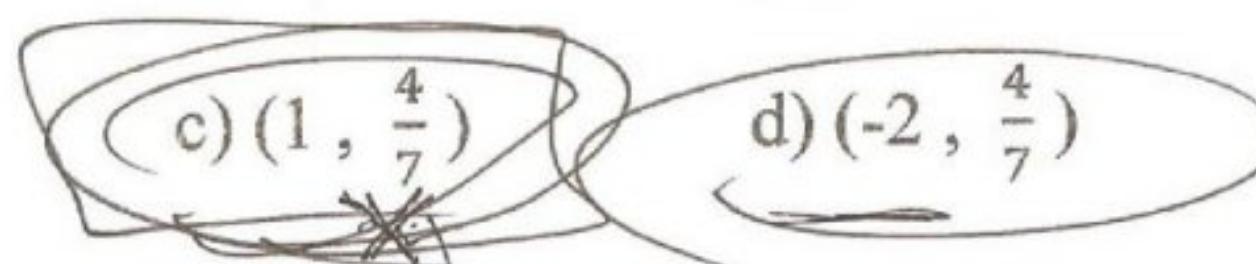
- a)  $c = -4$
- b)  $c = -2$
- c)  $c = 2$
- d)  $c = 4$

8) If  $2x^2 + y^2 = 2$ , then  $\frac{d^2y}{dx^2} =$

- a)  $-\frac{4}{y^3}$
- b)  $\frac{4}{y^3}$
- c)  $-\frac{6}{y^3}$
- d)  $\frac{6}{y^3}$

9) One of the following is an inflection point for  $f(x) = \frac{x^2}{x^2+3}$

- a)  $(-1, \frac{1}{4})$
- b)  $(0, \frac{1}{3})$



- c)  $(1, \frac{4}{7})$
- d)  $(-2, \frac{4}{7})$

10)  $f(x) = \frac{x^2}{x^2+3}$  increasing in

- a)  $[-1, 1]$
- b)  $[1, \infty)$
- c)  $(-\infty, 0]$
- d)  $[0, \infty)$

11)  $f(x) = \frac{x^2}{x^2+3}$  concave down in

- a)  $[-1, 1]$
- b)  $(-\infty, -1) \cup (1, \infty)$
- c)  $(-1, 1)$
- d)  $[0, \infty)$

12)  $f(x) = \frac{x^2}{x^2+3}$  has absolute maximum at

- a)  $x = -1$
- b)  $x = 0$
- c)  $x = 1$
- d) non of these